



**The Victoria History of the
Counties of England**

EDITED BY H. ARTHUR DOUBLEDAY

**A HISTORY OF
HERTFORDSHIRE**

VOLUME I

A HISTORY OF THE COUNTY
OF HERTFORD IN FOUR
VOLUMES EDITED BY
WILLIAM PAGE, F.S.A.

THE
VICTORIA HISTORY
OF THE COUNTIES
OF ENGLAND
HERTFORDSHIRE



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INSCRIBED
TO THE MEMORY OF
HER LATE MAJESTY
QUEEN VICTORIA
WHO IN HER LIFETIME GRACIOUSLY
GAVE THE TITLE TO
AND ACCEPTED THE
DEDICATION OF
THIS HISTORY

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GENERAL ADVERTISEMENT

THE VICTORIA HISTORY of the Counties of England is a National Survey showing the condition of the country at the present day, and tracing the domestic history of the English Counties back to the earliest times.

Rich as every County of England is in materials for local history, there has hitherto been no attempt made to bring all these materials together into a coherent form. There are, indeed, histories of English Counties; but many of them—and these the best—are exceedingly rare and costly; others are very imperfect; all are out of date.

THE VICTORIA HISTORY will trace, county by county, the story of England's growth from its prehistoric condition, through the barbarous age, the settlement of alien peoples, and the gradual welding of many races into a nation which is now the greatest on the globe. All the phases of ecclesiastical history; the changes in land tenure; the records of historic and local families; the history of the social life and sports of the villages and towns; the development of art, science, manufactures and industries—all these factors, which tell of the progress of England from primitive beginnings to large and successful empire, will find a place in the work and their treatment be entrusted to those who have made a special study of them.

Many archæological, historical and other Societies are assisting in the compilation of this work, and the editor also has the advantage of the active and cordial co-operation of the National Trust, which is doing so much for the preservation of places of historic interest and natural beauty throughout the country.

The names of the distinguished men who have joined the Advisory Council are a

guarantee that the work will represent the results of the latest discoveries in every department of research. It will be observed that among them are representatives of science; for the whole trend of modern thought, as influenced by the theory of evolution, favours the intelligent study of the past and of the social, institutional and political developments of national life. As these histories are the first in which this object has been kept in view, and modern principles applied, it is hoped that they will form a work of reference no less indispensable to the student than welcome to the man of culture.

Family History will, both in the Histories and in the supplemental volumes of chart pedigrees, be dealt with by genealogical experts and in the modern spirit. Every effort will be made to secure accuracy of statement, and to avoid the insertion of those legendary pedigrees which have in the past brought discredit on the whole subject. It has been pointed out by the late Bishop of Oxford, a great master of historical research, that 'the expansion and extension of genealogical study is a very remarkable feature of our own times,' that 'it is an increasing pursuit both in America and England,' and that it can render the historian useful service.

Heraldry will also in this Series occupy a prominent position, and the splendours of the coat-armour borne in the Middle Ages will be illustrated in colours on a scale that has never been attempted before.

The general plan of Contents, and the names of the Sectional Editors (who will co-operate with local workers in every case) are as follows:—

Natural History. Edited by AUBRY B. R. TREVOR-BATTYE, M.A., F.L.S., etc.

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Among the many thousands of subjects illustrated will be castles, cathedrals and churches, mansions and manor houses, moot halls and market halls, family portraits, etc. Particular attention will be given to the beautiful and quaint examples of architecture which, through decay or from other causes, are in danger of disappearing. The best examples of church brasses, coloured glass, and monumental effigies will be depicted. The Series will also contain 160 pictures in photogravure, showing the characteristic scenery of the counties.

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Each History will contain Archæological, Domesday, and Geological maps ; maps showing the Orography, and the Parliamentary and Ecclesiastical divisions ; and the map done by Speed in 1610. The Series will contain about four hundred maps in all.

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The Histories will contain, in the Topographical Section, manorial pedigrees, and accounts of the noble and gentle families connected with the local history ; and it is proposed to trace, wherever possible, their descendants in the Colonies and the United States of America. The Editor will be glad to receive information which may be of service to him in this branch of the work. The chart family pedigrees and the arms of the families mentioned in the Heralds' Visitations will be issued in a supplemental volume for each county.

The Rolls of Arms are being completely collated for this work, and all the feudal coats will be given in colours. The arms of the local families will also be represented in connection with the Topographical Section.

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St. James' Cathedral, N.Y.

St. James' Cathedral, N.Y.

THE
VICTORIA HISTORY
OF THE COUNTY OF
HERTFORD

EDITED BY
WILLIAM PAGE F.S.A.

VOLUME ONE



WESTMINSTER
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1902

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P R E F A C E

FOR the design and scope of the *History of Hertfordshire* the reader is referred to the General Advertisement of the *Victoria History*.

While it is intended in the earlier portion of each *History* to keep to a chronological order as far as possible, the conditions obtaining in some counties make it desirable to depart slightly from the general rule. In the case of Hertfordshire the break in continuity is made by omitting the Romano-British chapter from this volume. Although our knowledge of Saxon times as far as this county is concerned is very imperfect, there is at present no such activity of research in this department as to encourage the hope that important facts may be brought to light if publication be delayed. But the excavations which are proceeding at Verulamium may add something to the very scanty material available for reconstructing the story of the county at the time of the Roman occupation, and Mr. Haverfield's contribution will therefore be reserved for a future volume.

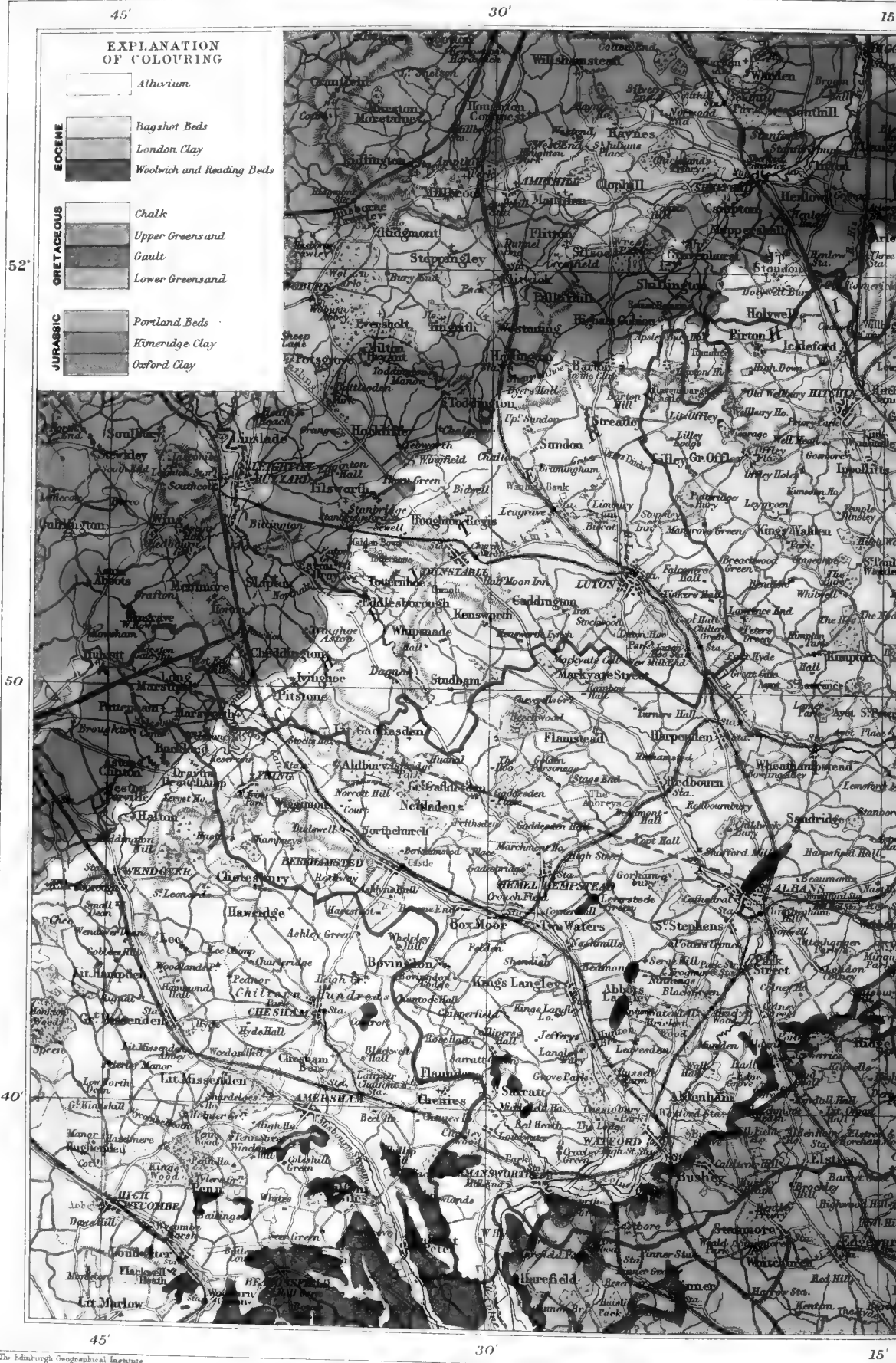
It may be questioned by some whether there be any need for another *History of Hertfordshire*, seeing that three histories of the county have been issued already at various times. But it may be pointed out that in none of them is there to be found a general view of the county and its life such as is projected in the present work ; nor has the true foundation of modern county history—the Domesday Survey—been examined by previous historians with the care it deserves. In this respect the *Victoria History* claims to supersede its predecessors ; and while the public must ultimately judge whether the ideals of the editors be in any degree realized, it is believed that in the manorial history, which will follow in two of the three succeeding volumes, the student will find a greater measure of accuracy than in the earlier histories. A particular statement of the plan upon which the topographical history has been compiled will be given in the preface to the next volume, in which the first portion of this section will find a place. The fourth volume will contain general articles on Ecclesiastical, Political, Social and Economic history and other subjects, as announced in the prospectus.

PREFACE

In the compilation of this volume the Editors are much indebted to the assistance of Sir John Evans, to whom their thanks are also due for the loan of illustrations. For help in organizing the contributions on Natural History and for revision of the proofs of these articles they are under great obligations to Mr. John Hopkinson.

The Editors also desire to acknowledge the courtesy of the Marquess of Salisbury, the Headmaster of Harrow School, Mr. G. N. Marten, the Society of Antiquaries, and the committee of the St. Albans Museum in making available for publication some of the illustrations which appear in this volume.

A HISTORY OF
HERTFORDSHIRE



The Edinburgh Geographical Institute





GEOLOGY

THE geological structure of Hertfordshire attracted the attention of our earliest county historian long before geology became a science. 'Concerning the Soyle:' said Norden in 1597,¹ 'It is for the most part chalkie, though the upper cruste in the South and West parts be for the most part of redde earth mixed with gravell, which yet by reason of the white marle under it yeeldeth good wheat and oates . . .'. Norden here makes a definite geological observation, that the Chalk, which forms the main stratum of the county, is overlaid in the south and west by a mixed soil of red earth (or clay) and gravel. This is correct so far as it goes, but it appears to have escaped his notice that in the east a loamy clay (boulder-clay) overlies the Chalk, and that in the south-east a stiff clay (the London Clay) completely alters the character of the soil, so effectually covering up the Chalk which lies underneath it that it is more suitable for root-crops and pasture than for raising 'good wheat and oates.' Norden also quaintly says that in the north part of the shire 'the soyle is very apt to yeeld corne and dertie wayes,' and in his account of Hitchin² he speaks of 'a kinde of chalke . . . a stonie Marle, more fit to make lime than to soyle the grounde.'

Chauncy, in his account of the soil of Hertfordshire, does little more than copy and amplify Norden. 'The upper Cruste,' he says,³ 'in many Places consists of red Earth, mixt with Gravel; most of the Meadows are dry; the Hills wet and cold, for they are Clay, therefore barren; and for divers Parts it contains Chalk within a Foot or a Fathom of the Surface of the Ground . . .'. Salmon merely says of 'the Earth':⁴ 'The Soil is none of the fruitfullest . . . The Arable hath generally too much Gravel or too much Clay.' In his account of Moor Park, however, in referring to alterations to 'More House,'⁵ he says that 'in digging were found Veins of Sea Sand with Musscles in it.' This is the earliest mention of the finding of fossils in Hertfordshire, and must have created some astonishment in his day. Even in 1756 the finding of 'a petrified Echinus . . . at Bunnan's Land in the parish of Bovingdon' was considered worthy of record in the *Philosophical Transactions of the Royal Society*.

¹ *Speculum Britanniae Pars*, 'The Description of Hartfordshire,' p. 1 (quoted from the 1723 edition).

² *Op. cit.* p. 18.

³ *Historical Antiquities of Hertfordshire*, p. 1 (1700).

⁴ *History of Hertfordshire*, p. 1 (1728).

⁵ *Op. cit.* p. 110.

A HISTORY OF HERTFORDSHIRE

Clutterbuck is our first historian who gives any precise information on the geology of the county. Under the heading of 'Natural History and Climate',¹ he gives a brief description of the Totternhoe Stone and of the Hertfordshire Conglomerate. This appears to be the earliest notice of the latter except the following curious account in a work dated 1756, relating to the Natural History of the county, as quoted by Young Crawley,² who gives neither the title of the work nor the author's name. 'The surface of every ploughed field is covered with innumerable small Stones of the flinty kind generally, and many of them inimitably variegated with various Colours and Figures. The Plumb Pudding stone may also be called a native of this County. Many of this kind which are found here will weigh twenty or thirty pounds, and will bear as fine a polish as Glass, and far exceed in beauty all the Marble I ever saw. In many of their gravel pits are also found clear, transparent pebbles, generally not exceeding the size of chestnuts, and seldom less than a pea, but as clear as a drop of water, and extremely hard. These cut and polish as fine as a Diamond, and when set upon a good foil appear extremely brilliant, and are capable of being made into Rings, Buttons, and other Toys.'

The geological formations represented in Hertfordshire,³ with their chief lithological characters and approximate thickness, are given in the following table, in descending order, the names of the formations which do not come to the surface in the county being printed in italics.⁴

¹ *History of Hertfordshire*, vol. i. p. iii. (1815).

² *Guide to Hertfordshire*, 'Introduction,' p. 9 (1880).

³ For a complete account of these formations reference should be made to the *Memoirs of the Geological Survey*, especially *The Geology of London and of Part of the Thames Basin*, by W. Whitaker, B.A., F.R.S., 2 vols. (1889).

⁴ The coloured section with the map shows the escarpment of the Chalk and the outcrop of the underlying Secondary rocks beyond Pitstone Hill, with the false escarpment of the Upper and part of the Middle Chalk at Moneybury Hill, the hollow between these two hills being a dry valley. The Chalk Rock at the summit of the Middle Chalk and the Melbourn Rock at its base are shown by double lines, and so is the Totternhoe Stone near the base of the Lower Chalk. Outliers of the Eocene Beds over the Chalk are illustrated by the one at St. Albans, and inliers of the Reading Beds underneath the London Clay by that at Gough's Oak. A slight anticline in the Chalk is indicated here. The dip of the Chalk from the swallow-holes at Potterells near North Mimms shows how water sinking in there will find its way along the interstices in the layers of flints into the valley of the Lea rather than into that of the Colne.

The plain section in the text (p. 4) shows the position and dip of the Silurian and Devonian rocks where proved to be present beneath an uneven under-surface of the Gault. It is evident that the Devonian rocks must rest unconformably upon the Silurian nearly 1,000 feet beneath the surface somewhere between Hertford and Turnford. The unconformity between the Secondary and the Palæozoic rocks is seen to be rather greater than that between the Silurian and Devonian. The thinning-out of the Lower Greensand towards the south-south-west and the thinning-out of the Upper Greensand in a north-north-easterly direction are indicated. As in the other section, the Chalk Rock, Melbourn Rock, and Totternhoe Stone are represented by double lines. An Eocene outlier near Bennington has inadvertently been omitted to be shown. The horizontal line through the section (appearing by an optical illusion to dip to the left) indicates Ordnance datum.

In each section the vertical scale is twelve times the horizontal, the latter being the same scale as that of the map, on which the trend of each section is indicated by a thin black line.

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| Period | Formation | Character of the strata | Approximate thickness in feet |
|------------------|----------------------------------|---|-------------------------------|
| Recent | Alluvium | Peat, clay, loam, etc. | 1 to 10 |
| | Valley gravels | Gravels of existing rivers | 5 to 20 |
| Pleistocene | River Drift | Older river-gravel and sand | 5 to 30 |
| | Clay-with-flints | Reddish clay with angular flints | 1 to 25 |
| | Brickearth | Loamy and sandy clay | 5 to 60 |
| | Glacial Drift | Chalky boulder-clay | 10 to 40 |
| | Westleton Shingle | Gravel and sand | 10 to 20 |
| Lower Eocene | | Pebbly gravel | 1 to 10 |
| | London Clay | Brown or bluish clay, with basement-bed of brown clay and pebbles | 20 to 170 |
| | Reading Beds | Sands, mottled and plastic clays, and pebbles | 25 to 40 |
| Upper Cretaceous | | <i>Thanet Sands</i> | 0 to 10 |
| | Upper Chalk | Soft white chalk, with layers of flints | about 300 |
| | Middle Chalk | Chalk rock—very hard, cream-coloured | 1 to 4 |
| | | White chalk, with few flints | 200 to 350 |
| | | Melbourn rock—hard, nodular | 10 |
| | Lower Chalk | Grey and white chalk | 65 to 90 |
| | | Totternhoe stone—hard, white | 6 to 12 |
| | Upper Greensand | Chalk marl—grey marly chalk | 20 to 60 |
| Lower Cretaceous | Gault | Soft marly sandstone | 0 to 44 |
| | | Stiff blue clay | 150 to 215 |
| Lower Cretaceous | <i>Lower Greensand</i> | Iron-sands and 'carstone' | 0 to 10 |
| Upper Jurassic | <i>Purbeck Beds</i> | Clays and argillaceous limestone | — |
| | <i>Portland Beds</i> | Sands and shelly limestone | — |
| | <i>Kimeridge Clay</i> | Dark-coloured clay | — |
| Devonian | <i>Upper Devonian</i> | Dull-purple shale | — |
| Silurian | <i>Wenlock</i> | Shale and limestone | — |

The existence of Devonian and Silurian rocks at a great depth under the surface in this area is only known to us from borings made by the New River Company in the valley of the Lea. These very old rocks must for ages have formed a land-surface stretching right across Hertfordshire, and probably giving rise to rivers flowing to the north and to the south. The shore-line of the Lower Greensand sea on the south apparently ran through the north of London, and that of the contemporaneous northern sea through the north of Hertfordshire, trending north-east and south-west, and communicating in that direction, through

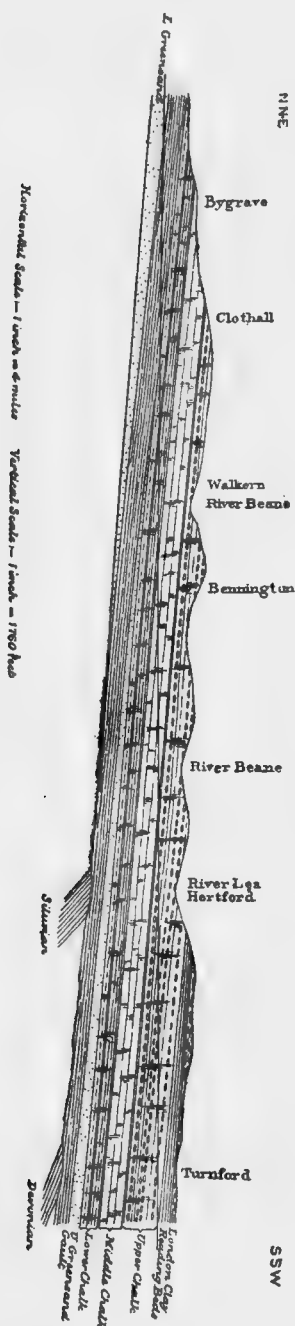
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Oxfordshire, with the southern sea. Silurian rocks formed the highest land. At a depth of 797 feet beneath the surface (685 feet below Ordnance datum) the Wenlock Shale with bands of limestone was found at the boring between Hertford and Ware, where is now the Broad-

mead well, dipping about 1° west of true south at an angle of 41° with the horizon.¹ Upon these Silurian rocks, after some earth-movements had taken place, disturbing their original horizontal position, Devonian rocks were deposited. At a depth of 980 feet beneath the surface (872 feet below Ordnance datum) Upper Devonian shale was met with at Turnford near Cheshunt, a few miles south of the Ware boring, dipping about 17° west of true south at an angle of 25° with the horizon.² Devonian rocks have also been found under London at an increasing depth as we proceed from north to south. They were therefore deposited unconformably upon the Silurian rocks, and the old land-surface gradually became lower from Ware southwards.³ South of London it was much lower, as shown by the great depth to which the Netherfield boring in Sussex was carried without reaching it.

After the deposition and upheaval of the Devonian rocks a very long interval supervened before Hertfordshire was undoubtedly again beneath the sea, and considerable earth-movements took place, as shown by the angle of dip of these rocks. During this interval the whole of the Carboniferous, Permian, and Triassic, and nearly the whole of the Jurassic rocks were deposited in other parts of England; at least if any older rocks than the Upper Oolites ever existed in our area, no trace of them has yet been found.

At Puttenham, in the extreme north-west of the county, beyond the Tring reservoirs, near the bottom of a bore-hole carried to a depth of 225 feet from the surface, the Kimeridge Clay was met with. The well was carried to a depth of 115 feet entirely through Gault clay, here about 150 feet thick; the boring was commenced in this clay and passed



¹ Francis, 'On the Dip of the Underground Palæozoic Rocks at Ware and Cheshunt,' *Rep. Brit. Assoc.* for 1895, p. 451 (1896).

² *Op. cit.* p. 452.

³ Hopkinson, 'On the Recent Discovery of Silurian Rocks in Hertfordshire,' *Trans. Watford Nat. Hist. Soc.*, vol. ii. p. 241, see pl. ii. (1880).

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through either Lower Greensand or Portland Sand, most probably the latter, as it comes to the surface at Hulcot in Bucks, four miles to the north-west. Below this the Kimeridge Clay is described as 'dark clay, with waterstones' [probably septaria], but the search for water was futile.¹ The Kimeridge Clay is a marine formation, as are the Silurian and Devonian rocks reached so far beneath the surface in the east of the county, but there is evidence, in its lignites and in the presence of coniferous wood in considerable quantity, of the proximity of land. The Portland Beds are also of marine origin; but immediately above them, and coming to the surface at Liscomb Park near Soulbury, thirteen miles north of Puttenham, are Purbeck Beds, which are of estuarine and fresh-water origin. It therefore seems probable that towards the close of the long interval unrepresented in our county after the Devonian beds became dry land—perhaps many millions of years—a submergence here took place, and rivers brought down from a not far-distant land-surface the mud of which the Kimeridge Clay consists; that by the gradual elevation of this land-surface the sea became shallower, the sands of the Portland series then being deposited; and that, the elevation still continuing, estuarine and fresh-water conditions prevailed, these being characteristic of the Purbeck Beds. The three formations here mentioned—the Kimeridge Clay and the Portland and Purbeck Beds—form the Upper Oolites, the highest division of the Jurassic rocks.

Within twenty miles from Puttenham, in a north-north-westerly direction, the whole of the lower divisions of the Jurassic series are met with—the Middle Oolites, the Lower Oolites, and the Lias—the axis of elevation having thus been on the north or north-west. After the beds were raised from their original horizontal position, so as to dip towards Hertfordshire away from this axis, they were planed down by denudation, the edges of the strata thus successively cropping out. It is this tilting-up which brings the older and originally lower rocks to the surface so that they crop out from underneath the newer rocks which have been deposited upon them. When the tilted-up edges of the newer rocks offer a greater resistance to denudation than those underneath them they terminate in an escarpment such as that of the Chalk; when a less resistance, in a valley, which may be extended into a plain such as that of the Gault.

We now come to the third great division of the Secondary rocks, the Cretaceous System. Its lowest member represented in Hertfordshire is the Lower Greensand. Whilst the Hastings Sands and Wealden Beds were being deposited in the south-east of England, there was probably dry land here, but this was gradually submerged, and the Lower Greensand was deposited over the Kimeridge Clay with a slight unconformity, its phosphatic-nodule bed at Potton, just outside our county boundary, showing, in the numerous water-worn fossils derived from the Jurassic rocks, what a great amount of denudation they must have

¹ Whitaker, 'Hertfordshire Well-sections,' 2nd paper, *Trans. Herts Nat. Hist. Soc.*, vol. vi. p. 60 (1890).

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undergone. It is present in our area only beneath the surface, the whole of its outcrop being outside the county, trending in a south-westerly direction from the neighbourhood of Potton, through Shefford, to Leighton Buzzard. In a well-boring at Long Marston, six miles south of the latter place, it was met with about 10 feet in thickness, after 215 feet of Gault clay had been passed through. It thins out to nothing in the south-east, being absent where the Gault was passed through at Ware and Turnford. The Lower Greensand is the highest bed of the Lower Cretaceous Series.

Hitherto only the rocks which do not come to the surface in the county have been considered. The oldest formation which does so is of Upper Cretaceous age. This is the Gault, the earliest of that age, being next in succession to the Lower Greensand. Before its deposition there was a considerable disturbance of the strata previously deposited, resulting here in a subsidence which even brought beneath the sea the Palæozoic ridge that for ages had formed a barrier across our county between the seas on the north and on the south. While on the north-west the Gault reposes on the Lower Greensand, on the south-east it rests directly on Silurian and Devonian rocks. At Cheshunt it is 153 feet thick, at Ware 166 feet, and it increases in thickness towards the north and west, being 180 feet thick at Radwell near Baldock and at Hinxworth, about 200 feet at Ashwell, 210 feet at Hitchin, and 215 feet at Long Marston. It consists of calcareous marls and dark bluish-grey clays, with concretionary and phosphatic nodules. Owing to its soft and easily-weathered character it forms a plain and sometimes a depression at the foot of the Chalk escarpment, partly along, but chiefly beyond, the north-western margin of Hertfordshire. It enters the county from Cambridgeshire at the extreme north, in the Cam district, between the River Rhee and the Ruddry Brook; continuing just within the margin of the county, it passes into the Ivel district; it is again seen near Radwell north of Baldock, and again north-west of Pirton. The Thame district is in great part on it, and here it occupies the spur of the county beyond the Marsworth, Startups End, and Tringford reservoirs, the Wilstone reservoir being the only one which is actually on the Gault. Although in great part a stiff impermeable clay, the soil upon it is extremely fertile, having been rendered so by a covering of drift from the Chalk.

This Gault plain has, indeed, long been known as a fine corn-growing district. The greater part of it not under arable culture is well wooded with oaks, a characteristic feature of the formation, as the name 'Oak-tree Clay,' which has been given to it as well as to the clays of Kimeridge and Wealden age, indicates.

The Gault suffered much from denudation before the deposition of the next bed upon it, and its surface is very irregular. Towards the north-east it thins out greatly through the upper beds having been eroded. While in that direction it is immediately followed by the Chalk Marl, the lower beds of which are even sometimes wanting, towards the south-west the Upper Greensand is present; but by whatever

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bed in our area the Gault is followed there is in that bed evidence that its lower layers at least were formed chiefly from the waste of the Gault underlying them, for they contain phosphatic nodules and worn fossils derived from it. The so-called 'coprolite bed' which has mainly resulted from the denudation of the upper beds of the Gault, does not therefore mark a distinct geological horizon, but may at one place be of Upper Greensand age and at another may represent the lower, or even sometimes the higher beds of the Chalk Marl. When the Upper Greensand is present it appears as a thin bed of soft marly sandstone passing up in places into a chloritic marl, which may represent the higher beds of the same formation, but is generally the lowest bed of the Chalk Marl there represented.

This bed of phosphatic nodules and worn Gault fossils, whether it be of Upper Greensand or of Chalk Marl age, is of considerable economic value, being extensively worked for the production of artificial manure, but the only 'coprolite' pits within the county are those at Ashwell.

While there is a decided physical break between the Gault and the Upper Greensand, and a change of conditions took place from a rather deep and quiescent sea to comparatively shallow water, probably with shifting currents, there is no distinct line of demarkation between the Upper Greensand and the Chalk Marl, and it is sometimes difficult to say to which a certain bed should be assigned. The Upper Greensand is about 40 feet thick in the south-east of the county, but thins out to nothing in the north. In the extreme west only does it come to the surface, in a thin band between Marsworth and Buckland, just beyond the Wilstone reservoir. It is 44 feet thick at Cheshunt and 40 feet at Ware, its position at the former place being from 675 to 719 feet below Ordnance datum, and at the latter place from 478 to 518 feet below this datum. It consists of fine greenish sands with hard calcareous sandstone and chert, the typical green beds usually being charged with glauconite, and it contains sponge-spicules, Foraminifera, and other fossils. It appears to have been laid down in a sinking sea-bed, the deposit in which gradually changed from one of mechanical origin, from erosion of adjacent land, to one of almost entirely organic origin, the great Chalk formation having been formed by and from the remains of the animals, mostly of microscopic size and lowly nature, which lived and died in and on the surface of the deep Cretaceous seas.

The Lower Chalk rests upon the eroded surface of the Gault, or gradually takes the place of the Upper Greensand. It usually has for its basement-bed either the Chloritic Marl or the Cambridge Greensand, homotaxial deposits the lower beds of which contain phosphatic nodules and numerous fossils mostly derived from the Gault, many being phosphatized. Whichever is present is followed by the Chalk Marl, a soft marly chalk with no flints but a considerable amount of silica. The Chalk Marl varies from about 20 to 60 feet in thickness, and the whole of the Lower Chalk from about 100 feet (Great Offley) to 180 feet or thereabouts (Cheshunt). At Bushey its thickness has been given as 255

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feet, but its limits are not clearly defined in well-borings, and it is almost certain that too great a thickness has been assigned to it there. This may also be the case at Cheshunt.

From the softness of the Chalk Marl the Lower Chalk at first forms a continuation of the Gault plain, and then a gentle upward slope along the denuded edge of its escarpment up to its junction with the Totterhoe Stone. This is a hard, rather sandy chalk, from 6 to 12 feet thick, and often occurs in two beds, each 3 or 4 feet thick, and separated by a few feet of marly chalk. From its hardness the Totterhoe Stone stands well out above the plain of softer strata, usually forming a distinctive feature in the landscape. It enters the county in the Cam district, at Ruddry Spring near Ashwell, passes through the Ivel district north of Baldock, near Cadwell north of Hitchin, and by Pirton and Hexton. It then enters Bedfordshire, in which county it forms the ridge of Sharpenhoe Knoll, and it has long been extensively worked at Totterhoe as a building-stone, but has not been quarried there for some years. It decays rapidly when exposed to frost and other effects of the weather, as the present state of the west front of Dunstable Priory Church, which is built of it, testifies. It should not be employed for exteriors, but it is admirably adapted for interior decorative work, being at first soft and easily manipulated, and hardening and becoming whiter as the moisture dries out of it. The last which is seen of the Totterhoe Stone in Hertfordshire is in the Thame district north-west of Tring, where it crops out near the summit-level of the Grand Junction Canal south-east of the reservoirs, then forming the ridge of the hill which extends for some distance along the south-eastern side of the Wendover Canal.

Nearly all along the outcrop of the Totterhoe Stone there are springs at frequent intervals which give origin to deep combes in the north-western escarpment of the Lower Chalk. The water in several instances soon disappears from the surface, being absorbed into the Chalk Marl; the combes then being formed, or perhaps merely deepened, by underground denudation. The rest of the Lower Chalk consists of about 60 to 90 feet of hard grey and white chalk, followed by 4 or 5 feet of grey marly chalk.

There are two other hard beds in the Chalk of Hertfordshire, the Melbourn Rock and the Chalk Rock. The most recently expressed view is that the former divides the Lower from the Middle Chalk, and the latter the Middle from the Upper Chalk; but this gives so many divisions to the Chalk that it is best here to consider the Middle Chalk as having the Melbourn Rock at its base and the Chalk Rock at its summit. The Melbourn Rock is a hard, yellow and white, bedded nodular chalk, about 10 feet thick. It may be well seen in a small pit just below Willbury Hill, and it partly surrounds Ravensborough Castle, which is not really a castle but an ancient camp, five miles west of Hitchin. A bed of white chalk, which varies in thickness from about 200 to nearly 350 feet, follows. It is more silicious in composition than the Upper Chalk, but has only a few flints irregularly distributed through

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it. It forms a rather steep escarpment to the north-west, from half a mile to two miles in breadth. At its summit is the Chalk Rock, a very hard bed of chalk, which varies from about 1 foot to 4 feet in thickness, and is sometimes, like the Totternhoe Stone, divided into two beds with a foot or more of the softer chalk between them. It is cream-coloured, much jointed, and has layers of green-coated nodules of equally hard chalk at the top, which is somewhat irregular, as if it had been exposed or subject to slight denudation before the next layer of chalk was deposited. Owing to its hardness, it has so far resisted denudation as to be usually found at or near the top of the Chalk hills which form the water-parting between the catchment-basins of the Ouse and Lea on the north and those of the Thame and Colne on the north-west. Owing also to its hardness it is a very difficult rock to work for fossils, but it is one which better repays the labour than any other in Hertfordshire. It forms the top of the Chalk escarpment south of Royston and north of Kensworth, and nearly all the tributaries of the Colne and Lea cut through it. There is a good exposure close to Markyate Street on the banks of a lane cut into it, and there was one in a chalk-pit south-east of Airley Green near Caddington; but this has now been covered in. The best exposure, however, is in the Midland Railway cutting at Chiltern Green, but that is just outside our county, in Beds. Collections of fossils from these localities may be seen in the Hertfordshire County Museum at St. Albans.

The Chalk Rock was first described by Mr. Whitaker,¹ partly from a collection of fossils made by Sir John Evans in the Boxmoor chalk-pit. It has recently been more fully described by Dr. Morison, and a list of its fossils found in the Chiltern Green cutting has been given by him.² Its Mollusca have been described, and many species have been figured by Mr. Henry Woods.³

At the junction of the Middle and Upper Chalk are the highest hills of Hertfordshire, forming part of the north-easterly prolongation of the Chiltern Hills, and attaining an elevation, along the Royston, Luton, and Dunstable Downs, of from 400 to 600 feet generally; and at Kensworth Hill, the highest point on the Dunstable Downs, of 810 feet, being the greatest elevation in the county.

The Upper Chalk, or chalk-with-flints, occupies much the largest area in Hertfordshire (at least three-fourths of the county). The general direction of the rivers of Hertfordshire is from north-west to south-east, and this corresponds with the slope of that portion of the county which is on the Upper Chalk. This generally forms an inclined plane, sloping downwards, with an inclination roughly coinciding with the dip or line of bedding of the Chalk, from the Chiltern Hills on the north-west to the valley of the Colne on the south, and that part of the valley of the

¹ 'On the Chalk Rock,' *Quart. Journ. Geol. Soc.*, vol. xvii. p. 166 (1861).

² 'Notes on the Chalk Rock,' *Trans. Herts Nat. Hist. Soc.*, vol. v. pp. 192-202 (1889).

³ 'The Mollusca of the Chalk Rock,' *Quart. Journ. Geol. Soc.*, vol. lii. pp. 68-98 (1896); vol. liii. pp. 377-404 (1897).

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Lea which extends from Hatfield to Hoddesdon on the south-east. Into this inclined plain the valleys have been cut, for the hills of this part of Hertfordshire 'are not ridges elevated above the general level of the surface ; but appear to be such only when viewed from the valleys of the rivers, whose waters have cut and furrowed deeply below the general level.'¹ Here and there these rivers have cut through the superficial deposits and the Upper Chalk into the Middle Chalk, exposing the Chalk Rock, which may thus be seen in the Bulbourn Valley as far south as Rough Down near Boxmoor.

There are a few exceptions to the almost uniform slight dip of the Chalk towards the south-east. South of Royston the dip is reversed, a line of flexure having been traced for a distance of five miles along the escarpment. In the Memoir on Sheet 47 of the Geological Survey² there are sketches of chalk-pits north of Barkway and on Reed Hill, showing a dip at about the junction of the Middle and Upper Chalk which gradually increases from zero to as much as 60° to the north. This appears to be merely a local disturbance, and the conjecture may be hazarded that it may have been caused by undermining resulting from the erosion of lower beds of the Chalk along the face of the escarpment. Other flexures in the Chalk will be noticed in the account of the Eocene beds when treating of the outliers and inliers to which they appear to have given rise.

The Upper Chalk is a very permeable bed, and wherever it comes to the surface it forms a dry porous subsoil. Only about 300 feet of the lower portion of it are present in Hertfordshire. While the highest beds were being deposited elsewhere, this part of England was probably above the sea ; but the Chalk which has been deposited here has undergone an immense amount of waste, continuous from its final if not from its first upheaval from the sea to the present time, and still going on. There may, however, have been a time when the Chalk, or at least the Upper Chalk, was entirely covered as it still is in the south-east of the county, by the Tertiary beds, the clays of which would protect its surface to some extent from disintegration. The great waste which it has undergone is due, more perhaps than to actual denudation, to the gradual dissolving of the carbonate of lime by water holding in solution carbonic acid (or carbon dioxide) derived from the air or from decaying vegetable matter. By this chemical action, which is continually going on, the flints and insoluble clay in the chalk are left on its surface, and form a deposit called 'clay-with-flints.' This covers a considerable area of the Upper Chalk, chiefly in the western part of the county. By the same chemical action also the so-called 'pipes' are formed, lines of weakness in the Chalk allowing of the more rapid percolation of water in certain places. Wherever it is not covered by an impermeable bed of clay, these 'pipes' occur, and as their funnel-shaped mouths are sometimes of considerable extent, they give a very uneven surface to the

¹ Coleman, *Flora Hertfordiensis*, p. xxxi. (1849).

² *Geology of the North-west part of Essex and the North-east part of Herts*, p. 8 (1878).

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Chalk, and alter the character of the surface-soil. There are better examples of such 'pipes' in the Harefield chalk-pits just across our county boundary, in Middlesex, than anywhere in Hertfordshire, but fine examples have at various times been seen in the cuttings of the three main railway lines which pass through the county ; nearly all are, however, now grassed over.

While the Lower and Middle Chalk frequently have but a thin covering of surface-soil, chiefly owing to their outcrop being usually in escarpments formed by comparatively recent denudation and having a steep slope, the Upper Chalk seldom comes to the surface except quite in the valleys where it and the superficial deposits upon it are subject to the erosive action of our existing rivers. While 'clay-with-flints' predominates on the west—in the Colne district—there are also, on high as well as low ground, thick beds of gravel and sand, formed either by glacial or river action. But on the east—in the Lea district—the Chalk is almost entirely covered with boulder-clay, except where the rivers have cut through this clay, exposing beneath it the glacial gravels and sometimes the Chalk.

The close of the Cretaceous epoch must have been marked by considerable changes in the distribution of land and sea. Great Britain during the deposition of the Chalk was but an archipelago, the islands of which it was composed existing only west of a line running north and south from the extreme north of England to Somerset and Devon. East of this line all was sea, deepening eastwards ; west of it our present mountains in Scotland, Ireland, the English Lake district, and North and South Wales, with the highest land in Devon, were islands of small size, except in Scotland ; there was open sea to the south, extending over the north of France, but north of Scotland there was land, where is now a deep sea. It was not, however, from the denudation of this northern continent that the Chalk was formed ; it was built up by the animals which lived in the Cretaceous sea—animals most of which were of microscopic size. The larger fossils which we now find in the Chalk, numerous though they are in some places, formed but a minute fraction of the number of living creatures which teemed in those deep seas or sported on the surface. The great mass of the Chalk consists of Foraminifera (*Globerigina*, etc.), and other microscopic Rhizopoda, or rather of their calcareous shells or siliceous external skeletons, either whole or reduced to fragments. It was minute creatures such as these which built up nearly the whole of the groundwork of our county, living and dying until their remains accumulated to a thickness of at least 800 feet.

The land then rose, the western archipelago becoming a continent, and the sea covering only the midland, eastern, and southern counties of England as far west as Devon, and of course including in its depths the whole of Hertfordshire.

The break between the Secondary or Mesozoic period and the Tertiary or older Cainozoic period is the most important of any in

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Europe, being a very decided physical as well as palæontological one. In both Cretaceous and Eocene strata the most abundant fossils are Mollusca, but the Protozoa, Rhizopoda, Crustacea, and Polyzoa which abounded in the Cretaceous seas were very sparsely represented in Eocene times ; on the other hand there were but few Cretaceous plants and no Cretaceous mammals, while plants, and especially Dicotyledons, are fairly well represented in Eocene strata, and the Tertiary era has been termed the Age of Mammals. The break however is not so much in the classes of plants or animals represented as in the fact that not a single species passes from Secondary to Tertiary rocks, indicating an enormous lapse of time, with perhaps a complete change of conditions. Physically the difference in the strata consists in the fact that hard, distinctly-bedded rocks, and especially those of a calcareous nature, cease with but few exceptions at the close of the Secondary period, giving place in the Tertiary to clays, sands, and gravels.

This great break is very well marked in Hertfordshire, for we have neither the highest beds of the Chalk nor the lowest of the Eocenes. There are higher beds of the Chalk, though not the highest known, and lower Eocene beds, south of London than we have here. As the Cretaceous sea must have been continuous north and south of London, the inference is that our Chalk must have suffered a greater amount of denudation than that of Surrey, Sussex, Hants, and Kent. That much erosive action has taken place is proved by the great irregularity of the surface of the Chalk in this county and by the enormous quantity of flints and therefore great thickness of strata which must have been removed to form the sands and pebble-beds of the Reading Series. The Woolwich and Reading Beds are of two types : in the one, best represented in the Woolwich district, loamy beds with many fossils prevail ; in the other, or Reading type, the beds are more pebbly and sandy, with but few fossils, and it is a significant fact that a greater denudation of the Chalk has taken place where the Reading type is present, as in Hertfordshire, than where the beds are of the Woolwich type, as in Kent. In our area the term 'Woolwich' is dropped because we have no beds of that type.

Although such a long interval elapsed of which we have no record, it does not appear that any earth-movements except subsidence then took place within our area, the eroded surface of the Chalk, although uneven, having been approximately horizontal when the earliest Eocene beds were deposited upon it. When the Chalk is covered by a bed of sand through which water can percolate, there is on its surface a layer of unworn green-coated flints usually considered to form the base of the Thanet Sands, but it should rather be regarded as a reconstructed Cretaceous bed, for the formation is not due to the deposition of sediment, the layer of flints being merely the insoluble residue of the Chalk, and its formation being a process probably continuous from or even before the upheaval of the Chalk to the present time. Why this layer seems to form the base of the Thanet Sands is due to the nature rather

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than the age of that formation, for it is also present when sands of the Reading Beds rest upon the Chalk, as in the Bushey chalk-pit near Watford.

When fully developed, as in Kent, the Thanet Sands are 50 or 60 feet thick, but they thin out under London to 20 feet, and are only known to occur in Hertfordshire from their presence in the Cheshunt boring, where their thickness is reduced to about 10 feet and they consist of grey and black sand.¹ They are of marine origin.

South-east of a line preserving a general north-east and south-west trend, but very irregular, crossing the Lea and Colne districts from a point about half a mile south of Stocking Pelham near Bishop Stortford to Woodcock Hill near Rickmansworth, the Chalk is overlaid by the Reading Beds and London Clay, the escarpment of which follows, at a distance varying from less than a quarter of a mile to a mile and a half, the river Ash downwards from Furneaux Pelham to Amwell Magna, the river Lea upwards from Hoddesdon to Hatfield, and the river Colne downwards from North Mimms to Harefield. Of the Reading Beds there is normally a narrow outcrop along this line, wider in the east than in the west owing to the difference in the slope of the ground ; and the London Clay reposes upon them, forming a range of hills along its escarpment generally from about 300 to 400 feet in height, and, at its highest point, Stanmore Common, between Watford and Elstree, rising to 500 feet.

The Reading Beds are represented in Hertfordshire by a very variable series of sands, mottled clays, and pebble-beds, there usually being at their junction with the Chalk the layer of green-coated flints already mentioned. They are here of estuarine origin, thus differing from all the formations already considered, which are of marine origin. From their small thickness, which varies from about 25 to 40 feet, and the usually rather steep slope of the ground at their outcrop, they do not occupy any great extent of country, and in most places have but little effect upon the surface-soil. Where their sands and clays predominate and get mixed with the London Clay, the soil is usually fertile, but where their beds of rounded flint-pebbles are much developed, as in the neighbourhood of Hatfield and North Mimms, the soil is particularly sterile. At Radlett and near North Mimms the principal pebble-bed is consolidated by a silicious cement into a conglomerate, well known as the Hertfordshire conglomerate or 'plum-pudding stone.' Although it is only known to occur with certainty *in situ* in this part of Hertfordshire at the present time, it has probably at some former period had a much greater extent, for masses of the conglomerate are strewn here and there nearly all over the county, and are also found beyond it. In a gravel-pit north of St. Albans there are large unwaterworn masses of it apparently but little disturbed from their original position, for they seem to form part of too extensive a bed to have been shifted horizontally ; indeed, in

¹ Whitaker and Jukes-Browne, 'On Deep Borings,' etc., *Quart. Journ. Geol. Soc.*, vol. 1. (50), p. 508 (1894).

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most places where there is a large unwaterworn mass it has probably been merely let down into its present position by the removal by denudation of the softer strata beneath it. Large boulders of this rock are frequently found in our rivers, and one such was dredged up from the Ver and erected on the green opposite Kingsbury, St. Albans, in 1887, as the Victoria Jubilee memorial of the village of St. Michaels.

The Reading Beds are cut into and their sands and clays are worked in many of our brickfields. Good sections may be seen in the brickfields near Harefield, at Bushey, in Hatfield Park, and in others along their line of outcrop. Their sands are frequently cross-bedded, indicating shifting currents. They are so very variable that it is impossible to construct a general section. In some places, for instance, there is a thick bed of pure white sand which is altogether absent in others.

Of the London Clay only the lower portion is represented ; the basement-bed of brown sandy clay with layers of flint-pebbles, which varies from about 6 to 12 feet in thickness, and is perhaps more truly a passage-bed between the Reading Beds and the London Clay than an integral member of the latter ; and a few feet of the lower portion of the true London Clay. This is here a stiff clay rather brown than blue in colour, appearing when freshly cut somewhat like the blue clay under London when that has been exposed for some time. The London Clay is usually capped on the highest points only by a pebble-gravel of Lower Glacial or of pre-Glacial age, in either case the remnant of a bed of gravel once of great extent. Elsewhere it is generally uncovered by superficial deposits, but in the valley of the Stort it is overlaid by chalky boulder-clay. Except in the valley of the Lea below Hoddesdon, where there are sandy loams and low-lying peaty marshes, and also where it is capped by pebble-gravel, the surface-soil upon it is a clay.

The area over which the Eocene beds extend presents a marked contrast to the Cretaceous area. Its soils, its agriculture, and its flora are of an essentially Middlesex type. In the Colne and Brent districts it forms grass-lands devoted to hay-farming and grazing, interspersed with woods chiefly of oak, ash, elm, and fir trees ; in the Lea district, on the south, owing to the rich alluvial soil, nurseries and market-gardens predominate ; while on the east, owing to the covering of boulder-clay, the land is chiefly under arable culture, partaking of the character of the corn-growing districts of the adjoining county of Essex.

Outliers of the Eocene beds are spread over a considerable area of the Upper Chalk, but there is not one to be seen beyond its limits. Most of these outliers extend in an irregular line which is roughly parallel with the line of outcrop of the main mass with which they have at one time been continuous. As a general rule the larger outliers are towards the north-east, and as they decrease in extent towards the south-west they become more scattered. The largest of these outliers occupies an area of $3\frac{1}{2}$ square miles between Braughing and Much Hadham, and consists only of the Reading Beds ; the Colliers End and Sacombe outliers, of less extent, follow near together, the latter of Reading Beds only, the former

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with London Clay also; then, at a little greater distance from the main mass, there is an outlier between Bennington and Watton, followed by a larger outlier on which Datchworth is situated, and a smaller at Ayot, these two being in the general direction, and the three having London Clay over the Reading Beds. All these are in the river-basin of the Lea, and their united area is about twelve square miles. In the Colne river-basin there is first an outlier at St. Peter's, St. Albans; there are three small outliers near together at Leverstock Green, Bedmond, and Abbot's Langley, the first of these being beyond the general line; three small outliers near Sarratt follow; and there is a small one near Chorley Wood, Rickmansworth. Most of the outliers in the Colne river-basin are of the Reading Beds only, and their united area is about three square miles.

For some distance this string of outliers roughly coincides with a tolerably well-marked ridge of hills stretching from Watton south-westward by Welwyn, Sandridge, and St. Albans, where it exceeds 400 feet in height, to Hemel Hempstead. This ridge probably indicates a line of flexure in the Chalk, which, while dipping elsewhere in a regular manner from the Chiltern Hills towards London, is slightly depressed along this line. The Eocene beds upon it may have thus been let down below the plane of denudation, allowing patches of them to be preserved. Their clays being better able to resist subsequent sub-aërial denudation than the surrounding chalk, which also is constantly being chemically dissolved, by the gradual wearing down of the surface of the Chalk they would in course of time be left as hills.

These outliers completely change the character of the soil overlying the Chalk district. Some appear as well-wooded eminences on which the oak and elm flourish best; others, chiefly where the sands of the Reading Beds are more developed than their clays, or where the London Clay upon them is capped by pebble-gravel, are sandy, gorse-covered commons. Nearly all are worked for brick-making.

Far away to the north-west there are three very small outliers of the Reading Beds, of three or four acres each, following each other in a line from near Kensworth to Berkhamsted Common, the last of these only being in Hertfordshire. The presence of these outliers is important as showing the former great extent of the Eocene Beds, of which they furnish more conclusive evidence than do the boulders of Hertfordshire conglomerate which are found at even a greater distance from their parent bed.

To another line of flexure—an uprise of the Chalk—the existence of a series of inliers in the London-Clay area is probably due. Inliers are patches of lower beds exposed by the removal of the higher strata which once covered them. In Hertfordshire the Reading Beds are thus exposed beneath the London Clay in two inliers between Gough's Oak and Northaw, and if this presumed line of flexure be continued parallel with the outcrop of the Reading Beds into Middlesex, an inlier will be met with extending from Pinner, past Ruislip, to just beyond Ickenham.

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At the inlier half a mile north-east of Northaw the Reading Beds are cut through as well as the London Clay, and the Chalk is laid bare, showing an anticlinal axis, or axis of elevation. The Chalk hill on which Windsor Castle is situated is an inlier on the same line of flexure, but that is some distance from our county.

The Eocene beds of Hertfordshire form part of the north-western margin of the London Tertiary Basin, usually designated 'The London Basin' only, but it is not strictly speaking a *basin*. It is a shallow trough running nearly east and west, and tilted up slightly towards the west, thus giving it the form of a wedge with the apex on the west. It may be inferred from the lines of flexure which pass through the county that the slight crumpling of the strata which took place after the deposition of these beds, affecting them as well as the Chalk beneath them, was due to lateral pressure exerted from the north-west or the south-east, which might either be caused by shrinkage of the earth from its loss of internal heat, or by volcanic activity, or by both these actions combined. This shrinkage is continually going on, and has been in progress ever since the earth commenced to be formed into a sphere of molten matter from its original incandescent nebulous state. It is the chief initial cause of volcanic outbursts, and we know that such outbursts occurred in the British Isles on the close of the Eocene period, that is in Oligocene and Miocene times. It is not improbable therefore that these flexures were caused by pressure from the north-west during the period when volcanoes were pouring out lavas and throwing out ashes upon the Chalk and older rocks of the north-east of Ireland and the west coast and western islands of Scotland.

How soon after the close of the Lower Eocene period Hertfordshire was upheaved from beneath the sea we do not know, for what remains of the London Clay may be but a small fragment of the strata which have been deposited in our area and removed by denudation. The proximity of outliers of the Lower Bagshot Beds, as on Harrow Hill, indicates that the southern portion of the county, if not the whole, continued beneath the sea until at least the commencement of Middle Eocene times, but it may have risen before the end of the Eocene epoch, and have been dry land while the fluvio-marine (Oligocene) series of southern Hampshire was in course of formation, continuing to be a land-surface during Miocene and Pliocene times. In that case its surface would then have become greatly diversified by sub-aërial denudation, under perhaps a tropical rainfall; but it was shortly to be subjected to the levelling action of a great sheet of ice.

The fossils of the London Clay indicate a tropical climate, and the climate continued tropical or sub-tropical during Middle and Upper Eocene, Oligocene, and Miocene times. It then became cooler, and during the long interval which elapsed between the close of the Miocene and the commencement of the Pliocene period it reached the temperate stage, the molluscan fauna of the earliest Crag deposits being similar to that at present inhabiting the Mediterranean. Britain then stood high

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above the sea ; no German Ocean and no English Channel then existed ; and animals were free to roam and plants to spread across the land which connected our country both on the south and on the east with the continent of Europe. A period of gradual depression followed, the cold at the same time increasing, and during Pliocene times at first temperate and then boreal or arctic Mollusca teemed in the shallow seas and estuaries of the eastern counties, while remains of Mammalia, in gradually increasing quantities, were brought down by rivers from adjacent land. In all probability there then roamed over our county animals of the same species as those whose remains we thus find in the Crag (a Suffolk term for a shelly gravel or sand), but there is no evidence that our rivers flowed in that direction and contributed their sediments to any of the existing Crag strata. It is more probable that the rivers of Hertfordshire then flowed to the north, and removed thence vast quantities of Cretaceous and Tertiary strata, cutting off our Chalk from that of Yorkshire and Lincolnshire, and commencing to form the Chalk escarpment across the north-western margin of the county, its present features being due to subsequent erosion by the springs which form the sources of the Great Ouse.

What was the cause of this gradual refrigeration of our climate, culminating in the Glacial epoch, has given rise to a vast amount of controversy. This is not the place to discuss it, but it may be mentioned that, without bringing in cosmical changes, a very great alteration in climate might be produced by a different distribution of land and sea. A deflection of the Gulf Stream which might be brought about by changes in the distribution of land so far off as the continent of America, might at any time give to our islands almost an arctic climate.

It is necessary to look a little beyond our boundaries, for the student of Hertfordshire geology alone might be justified in assuming that there was a great gap between the Tertiary and Quaternary epochs, the greater part of the Eocene and the whole of the Oligocene, Miocene, and Pliocene deposits being unrepresented in our county ; but in the eastern counties there is an almost unbroken sequence between the two, the Forest-Bed series, which is the newest of the Pliocene deposits, passing upwards almost imperceptibly into the oldest of the Pleistocene strata. The justification for the change of name from Tertiary to Quaternary lies more in the alteration in the nature of the deposits than in any decided physical or palæontological break, for we have no longer to deal with regularly stratified beds which can easily be correlated over wide areas. In the Pleistocene period marine gravels were being formed at one place while rivers were accumulating gravel of somewhat similar composition in another not far distant ; mud was being deposited in the estuary of a river while on the sea-shore near it the wind was piling up heaps of sand, as in the present day. This great diversity of operations carried on at the same time makes the study of the Pleistocene period one of great difficulty, and our chief authorities vary greatly in their views. Much of the following attempt to show how this period is

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represented in our county must therefore be considered as open to controversy and liable to modification from future research.

The Quaternary era is usually divided into two periods, Pleistocene or Post-Pliocene, and Recent, the Pleistocene being equivalent to the Glacial period, and being divided into Lower, Middle, and Upper Glacial, and the Recent period being divided into Prehistoric and Historic. The oldest Pleistocene gravels in Hertfordshire and the south of England generally are however of pre-Glacial age; the Till or Lower Glacial boulder-clay is not represented here; and later in the Pleistocene period arctic conditions did not prevail uninterruptedly.

Our two chief beds of gravel Professor T. McKenny Hughes long ago distinguished as 'Gravels of the Upper Plain' and 'Gravels of the Lower Plain,' the former being the older of the two, and having been deposited by the sea which levelled the county into a plain of which we now see the remnants in the highest ground of the area of the London Clay.¹

These older gravels have been investigated by several other geologists, and especially by the late Sir Joseph Prestwich,² who has given to the greater part of them the name 'Westleton Shingle,' separating under the term 'Southern Drift' the gravel which caps our most southern London Clay hills and also occurs south of the Thames, this being considered of earlier formation than the pebble-gravel of Westleton and the eastern counties generally. The largest patch we have of this oldest shingle-gravel spreads over Stanmore Heath from Little Bushey to Bentley Priory at a height of 400 to 450 feet, and there are smaller patches on the hill between Pinner and Watford, and east of Stanmore on Elstree and Brockley hills, nowhere less than 380 nor more than 450 feet in height. The great ice-sheet of Norway and Britain, approaching from the north-east, does not appear to have extended farther to the south than these hills, but it is more probable that this was due to the melting of the ice than that the hills, or the range or plateau of which they then formed a part, created a barrier against its further progress. According to the views of Professor Hughes they are the remnants of an extensive plain which then existed, having been formed into hills by subsequent erosion of valleys on the north and on the south.

A little to the north of these hills are others capped by true Westleton Shingle. All these are Tertiary hills, either forming a part of the London Basin, in which case the shingle rests directly on the London Clay, or being outliers of Reading Beds with or without London Clay. We have no Westleton Shingle lying directly on the Chalk, which seems to show that the erosion of the Tertiaries from the surface of the Chalk had not taken place when this marine pebble-gravel was deposited. Mr.

¹ 'On the Two Plains of Hertfordshire and their Gravels,' *Quart. Journ. Geol. Soc.*, vol. xxiv. p. 283 (1868).

² In three papers on the Westleton Beds read before the Geological Society, *Quart. Journ. Geol. Soc.*, vol. xlv. pp. 84-119, 120-154, and 155-181 (1890).

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Whitaker gives expression to the same view from other evidence when he says: 'From its occurrence on the tops of the hills, whilst the Middle Glacial gravel often lies at their base or on their flanks, it would seem that the pebble-gravel is the older of the two, and was deposited long before those hills were cut into their present form—a process which must have been somewhat advanced before the other gravel was laid down.'¹

The Westleton Shingle caps the London Clay hills between Hatfield and Hertford Heath, where they form a conspicuous range between 320 and 380 feet high, and rests on the London Clay at Shenley Hill towards the south-west. Most of the Tertiary outliers, whether of Reading Beds and London Clay or of Reading Beds alone, are also capped by this shingle. It may be well seen on the Reading outlier at Bernard's Heath, St. Albans (406 feet), where it is from 8 to 10 feet thick, and on the Reading and London Clay outliers of Ayot Green (406 feet) and Datchworth (407 feet). At a lower level it caps the outliers of Collier's End (348 feet), and Sacombe Green, north of Ware (362 feet), and at a much higher level the small outlier at Bennett's End near Hemel Hempstead (465 feet), which is partly covered by brick-earth. On the borders of Hertfordshire and Middlesex the Westleton Shingle rests on the London Clay ridge which extends from Potter's Bar to Bell Bar (380 to 400 feet), and a little to the west caps the London Clay in Mimms Wood, a mile and a half north of South Mimms (400 feet). Within a mile of our border the Reading and London Clay outlier of Tyler's Hill or Cowcroft has a small capping of this shingle at a height of about 600 feet above sea-level, and much farther to the south-west, on what was once an outlying portion of our county, the shingle caps the Tertiary outlier of Penn near Beaconsfield, at the same elevation. It is thus seen that the Westleton Shingle generally occurs at a higher level as we proceed from east to west, showing that the existing elevation of the land in that direction took place after its deposition. This inference would not follow with Glacial deposits which may have been dropped from icebergs, and occur at very different levels.

Nearly all our London Clay hills and Tertiary outliers are thus seen to be capped by gravels of pre-Glacial age, remnants of a bed once of great extent. Although at one time a continuous sheet, the Westleton Shingle varies much in its composition at different places, but the greater part of it in our district is composed of well-rounded Tertiary flint-pebbles; white quartz-pebbles and subangular flints come next in different proportions, but together usually about equal in quantity to the flint-pebbles, and the rest consists of subangular fragments of chert and ragstone of Lower Greensand age, and pebbles of white and yellow quartzite, Lydian stone, etc., with a few old-rock pebbles.

In the foregoing description of the hill-gravels of the south of

¹ *Guide to the Geology of London*, 3rd ed. p. 57 (1880).

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Hertfordshire the views of Sir Joseph Prestwich have been adopted, but it should be mentioned that they are not universally accepted. The correlation of these gravels with the Westleton Shingle of Westleton has been disputed, and Mr. Clement Reid¹ now believes that the Stanmore gravel 'presents all the characteristics of an Eocene deposit.' He also remarks that 'It now seems doubtful whether outside the glaciated area any plateau gravels (*i.e.* gravels more than about 150 feet above the Thames) are to be found that are not either of Eocene age or derived wholly from Eocene deposits at a higher level.' A gravel *derived from* Eocene deposits may be of Westleton or any age subsequent to Eocene, but the higher the level the older is the gravel likely to be, and Prestwich considered the 'southern drift' of Stanmore Heath to be older than the Westleton Shingle.

After the deposition of this high-level shingle, which, with the Tertiary strata beneath it, then extended at least nearly to the edge of the present escarpment of the Chalk, the land gradually rose and the cold gradually increased until arctic conditions prevailed. A great ice-sheet spread over the Scandinavian peninsula and crept southwards over northern Britain, covering the whole of Scotland and nearly the whole of Ireland and the north of England, and extending over the Midland and Eastern counties including nearly the whole of Hertfordshire. Here it planed off the Chalk, cut away the Tertiaries, and carried off most of the Westleton Shingle, devastating the county as far south as the hills of Brockley, Elstree, and Stanmore. At the period of its greatest advance the ice-sheet terminated just north of these hills; snow-fields rested on the highest points in North Wales, Ireland, and northern Britain, glaciers descending from them and adding their quota to the field of ice; and here and there where evidence of ice-action is wanting there appears to have been an exposed surface of land. England was then joined to the continent of Europe, perhaps only between Kent and Normandy except by means of the ice-sheet on the north, the English Channel even then dividing the south of England from Brittany, while the Atlantic Ocean existed on the west.

The climate becoming milder, the ice-sheet receded, and as the ice melted, liberating a vast volume of water, the resulting rivers took its place as a denuding agent, excavating the valleys of the Colne and Lea. It was also probably soon after the retreat of the ice-sheet that, with a very heavy rainfall, the greatest deepening of the valleys of the Thames and Ouse took place, and the present general features of the escarpment of the Chalk were impressed upon it, but in quite a different manner from that in which the Tertiary escarpment was formed.

The Chalk escarpment has been and is still being cut back by the springs which issue from the Totternhoe Stone at its base, mostly at right angles with the strike of the Chalk; the cutting back of the Tertiary escarpment is effected by the rivers which flow along its foot

¹ *Summary of Progress of the Geological Survey for 1899*, p. 140 (1900).

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nearly parallel with the strike of the rocks (Chalk and Tertiaries). The Lea was then probably flowing off the high land of which the remnant still left is now known as part of the Chiltern Hills ; between Hatfield and Ware it has followed the trend of the Tertiary escarpment, cutting it back ; and at Amwell it has cut through this escarpment. It would appear that a vast amount of denudation must have taken place on the north-west of the present range of the Chilterns in this district since the Lea commenced to flow towards the south-east, for its source must then have been very much higher than it is now, otherwise it would have flowed in the opposite direction ; but whether this so-called 'Luton gap' was caused by river- or ice-action is uncertain. The river which takes the name of Ver above Bricket Wood Common and of Colne below it, flowed from the same hills near Kensworth, but only from the south-east, not the north-west side of the present range, and meeting with the Tertiaries south of St. Albans has almost ever since been eating back the Tertiary escarpment past Watford and Rickmansworth, increasing its steepness, and at Harefield it has cut through it. The chief tributaries of these rivers also flowed from the Chilterns and helped forward their erosive work, especially at the points of juncture. Although some of the main features of the county may date from Pliocene or even Miocene times, when its surface may have been even more diversified than it is at present, there can be little doubt but that many of those features were much modified over the greater part of the area during Lower Glacial times, and that it is only to the period immediately following the recession of the great ice-sheet that we can with certainty trace back the origin of our present river-valleys in the Chalk, the rivers then flowing at a higher level than they do now, but in the same general direction.

The land then sank and the sea gradually encroached upon it, the extent of the submergence being much greater in the north than in the south of Britain. In the Lake district of Cumberland stratified gravels of this period are found 1,600 feet above the level of the sea, and on Moel Tryfaen in North Wales there were then deposited sands and gravels since raised 1,350 feet, containing shells of species of *Mollusca* still living in the seas around Britain. There is a similar assemblage at Macclesfield 1,200 feet above the sea, and from the height at which the flint-gravel sand, and clay of this the Middle Glacial period are found in the south of England we may infer that Hertfordshire was depressed at least 500 feet below its present level. During this period of greatest submergence in Pleistocene times the British Islands formed a scattered archipelago ; the highest mountains of the north of Scotland were the only islands with their summits above the snow-line, for with the submergence the climate became milder, this period being an interglacial one ; and in Hertfordshire portions of the Chiltern Hills appeared as islands probably nowhere exceeding 200 feet in height. These Middle Glacial gravels are the 'Gravels of the Lower Plain' first described by Professor Hughes. They vary much in composition

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and arrangement, and contain many sub-angular flints and some unbroken and almost unworn ones, with drifted Oolitic and Liassic fossils, chiefly gryphæas and belemnites, and echinoderms and other fossils derived from the Chalk. Much false-bedded sand also often occurs, and sometimes a bed of loam or clay. 'These deposits are exposed and may be examined in nearly all the valleys south of the Chalk escarpment. They may be seen in the railway-cutting north of Hatfield, and in a pit on the hill-side east of Horn's Mill. They can be traced all along the hill-side from that place to Hatfield, near Cole Green station, and south of the Mimram near Tewin. In the road-cutting south of Broad Oak End Farm, and along the west side of the Beane between that place and Hertford, some boulder-clay, with glaciated stones, occurs at the base of the gravels. In the gravel-pits near Ware, some finely-laminated brick-earth, belonging to the Mid-glacial series, is seen to be folded and crumpled up and then covered by horizontal beds in the way usually ascribed to ice-action. At Camp's Hill there is also a brick-earth in the Mid-glacial beds, beneath which bones of reindeer, mammoth, and rhinoceros have been found. Mr. S. V. Wood found at Stevenage, in the brick-earths intercalated in the Middle Glacial series, several specimens of *Ostrea edulis*, a non-arctic shell . . . the only instance of [contemporaneous] fossils being found in the Mid-glacial of the county.'¹ The Middle Glacial beds are thus seen to be widely spread over the county, and to be very variable in their origin as well as in their nature.

Possibly the prevailing impression with regard to this period does not quite accord with the facts, the term Interglacial which has been applied to it being to some extent misleading. Although the only contemporaneous fossils known indicate a temperate climate, there are indications that the seas of the period were not free from icebergs. The (so-called) 'foreign rocks' found in our Mid-glacial gravels, which must have been carried a great distance from the north, being fragments of much older rocks than occur in Hertfordshire, and the fossils derived from distant formations, indicate some other transporting agent than rivers or ocean-currents, while the presence of local patches of boulder-clay with glaciated stones, confirms the view that ice-action was not entirely absent. A temperate climate is not incompatible with the occasional presence of icebergs drifting from the north; but the more likely explanation of the anomaly is that this period was one of long duration, generally cold but with mild intervals when a temperate molluscan fauna migrated to the seas of the British archipelago from the warmer southern waters. Such milder intervals would be most likely to occur when the depression of the land was greatest, and the

¹ Elsdon, 'The Post-Tertiary Deposits of Hertfordshire,' *Trans. Herts Nat. Hist. Soc.*, vol. i. p. 105 (1881). Prestwich has recorded the finding of pieces of the tooth and tusk of an elephant in gravel, which he believed to pass under the boulder-clay, at Bricket Wood near Watford, but there is some doubt as to the position of this gravel.—*Geologist*, vol. i. p. 241 (1858).



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only evidence in our county of such a mild interval is the presence of *Ostrea edulis* where the land must have been submerged at least 300 feet, for Stevenage now stands higher than that above sea-level.

The land rose and the cold increased ; the snow-line gradually extended southward from the northern islands of Scotland to the south of Ireland and South Wales ; and glaciers descended from the snow-fields and ploughed up the land at least as far south as the Chalk of the eastern counties. The *débris* was deposited in the depths of the valleys and on the slopes of the hills, and even up to the top of the escarpment of the Chalk, as on Reed Hill near Royston, but none is to be seen on the higher part of the escarpment towards the west, which would then be an island in the Glacial sea. This is but one of many views which are held as to the conditions under which the 'great chalky boulder-clay' was deposited, and it seems to be the most likely, but it has been well said : 'Where, as is too often the case with Glacial deposits, there is room for much diversity of opinion, geologists fully avail themselves of it. Hence it is best to picture the Glacial period in a general way, and to admit that glaciers and ice-sheets, icebergs and coast-ice, have all had their share in the production of the phenomena, although we cannot always localize their action.'¹

The Upper Glacial boulder-clay (Middle Glacial of S. V. Wood) is generally known as the 'great chalky boulder-clay,' owing to the numerous boulders of chalk which it contains. It is usually a rather dark bluish-grey calcareous clay, containing chalk in all forms—ground up with it, as small pellets or pebbles, and in all gradations of size up to very large masses, most of the larger chalk boulders being so hard as to have preserved, with the protection afforded by the clay in which they are imbedded, the scratches and grooves made by contact with harder rocks whilst they were being carried along imbedded in ice, this being the meaning of the somewhat misleading term 'ice-grooved rocks.' Imbedded in the boulder-clay are also many chalk-flints ; boulders from various formations, chiefly of rocks of Jurassic age, but also of much older and more distant strata, such as Carboniferous Limestone, deeply ice-grooved ; pebbles of quartz and small boulders of granite derived from formations still more distant both in time and space ; and fossils derived chiefly from the Lias and Oxford Clay. No fossils contemporaneous with its formation have been found in it.

Boulder-clay is spread over the greater part of north-east Hertfordshire as a continuous bed except where it has been cut through by the rivers ; it covers most of the higher ground in the centre of the county where the rivers have cut more deeply into it than on the east ; and the most south-westerly patch is at Bricket Wood between St. Albans and Watford. Sections of it may be seen there and at Little Berkhamsted, Bayford, Hertford Heath, Buntingford and several other places.

¹ H. B. Woodward, *The Geology of England and Wales*, 2nd ed. p. 486 (1887).

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It is evident that boulder-clay once filled up most of our valleys as well as covered all but our highest hills. In the east of the county the sources of our rivers are upon it ; the rivers then cut through it in places into the Chalk ; and lower down their valleys the boulder-clay has been completely cut through by them, exposing the underlying Glacial gravel and sand.

After the deposition of the boulder-clay the land again rose, but not for some time to its present level, the old shore-lines which pass through the southern counties, where they have left their mark in beach-shingle and sea-cliffs, being evidences of successive elevations of the land, at one time up to 140 feet below its present level, and subsequently to within a few feet of it.¹ The shingle-beaches at various levels indicate pauses in the upheaval, and by the time the sea had receded (or rather the land had risen) so far as to form a shingle-beach at least 100 feet higher than that now forming on our coasts, the arctic climate had given place to one milder than that which now prevails.

This period of upheaval marks the time when marine gravels finally ceased to be formed above the present sea-level, giving place to estuarine, alluvial, and lacustrine deposits. An instructive example of the latter is the ancient Hitchin lake-bed, for the most complete knowledge of which we are indebted to Mr. Clement Reid,² although it has also been investigated by Sir John Evans, Mr. William Hill, Mr. William Ransom, and other Hertfordshire geologists and archæologists ; for the formation of this lake-bed and the overlying deposits embraces the period during which the study of geology gives place to that of archæology, bringing Man upon the scene.

The alluvial or lacustrine deposits known as the Hitchin lake-bed lie in a channel or trough running nearly north and south, which appears to have been excavated, or re-excavated, after the deposition of the boulder-clay, the geological position of the lake-bed being between the great chalky boulder-clay, representing the close of the Glacial period in this neighbourhood, and the brick-earth in which Palæolithic flint implements are of frequent occurrence. The deposit is very variable in character, consisting of sandy, marly, and loamy beds, white, yellow, brown, and black, sometimes, from the abundance of decomposed plant-remains, even forming a lignite. It contains the teeth and bones of several mammals and fishes, remains of a few insects, the shells of many molluscs, the leaves and seeds of numerous flowering plants, several mosses, and a few charas. Most of the species still exist with us, but all the mammals have long been extinct in Britain in a wild state, and two, the mammoth and woolly rhinoceros, are altogether extinct. Their remains have all been found in a whitish marly silt which occurs locally above the deposits from which all the other fossils have been obtained. On this silt rests the Palæolithic brick-earth, which until recently yielded

¹ Clement Reid, *Victoria History of Hampshire*, vol. i. p. 23.

² 'The Palæolithic Deposits at Hitchin and their relation to the Glacial Epoch,' *Proc. Royal Soc.*, vol. lxi. p. 40 (1897); *Trans. Herts Nat. Hist. Soc.*, vol. x. p. 14 (1898).

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here the earliest traces of man ; but since the lake-bed was visited by Mr. Clement Reid a few species of mammals have been added to his list and a few flint implements have been found associated with them in this silt. It therefore seems probable that primæval man lived on the shores of this lake and there fashioned his rude implements of flint, but we cannot be certain that this was the period of his arrival in Britain. We do not find the remains of man in these deposits, but only the results of his handiwork in rudely-chipped flints. If, therefore, man existed in Britain before he became a tool-maker we should have no trace of such existence.

In a somewhat similar situation near Caddington Mr. Worthington Smith has found a workshop of Palæolithic flint implements ; he has found the cores from which chips have been struck, and he has found the chips struck off them and pieced them together again. Here there are also other indications of human habitation, and, as at Hitchin, by the side of a lake.

With the advent of man the geological record ceases and the archæological begins, but there are other superficial deposits which have not yet been noticed. Such are the detritus of existing rivers, whether gravel or alluvium, sometimes much higher than their present level, showing how deep they have cut down their beds ; and accumulations of peat resulting from vegetable growth on boggy land.

There are also deposits to which no definite age can be assigned, in addition to those of which the age is a subject of controversy. The formation of ' pipes ' in the Chalk has been going on ever since the Chalk was raised above sea-level and water percolated into it ; and ever since the Tertiary beds were removed from the surface of the Chalk, that surface where exposed has been ' weathered ' into clay-with-flints, this bed, which covers much of the Chalk in western Hertfordshire, being the result of surface-disintegration of chalk. Much of our brick-earth has also been forming for an indefinite period.

A brief summary may now be given of the foregoing attempt to trace the history of Hertfordshire before the advent of man, from which period the story will be continued by Sir John Evans.

The scene opens with a deep sea in which a calcareous deposit was forming—a sea teeming with the abundant life which characterized the Upper Silurian period. The nearest land-surface was a plateau of Cambrian rocks in the centre of England, the sea extending on the south to western France, where it washed a shore of Cambrian and Lower Silurian rocks. The sea-bed rose, and the calcareous mud, consolidated into shale and limestone, became crumpled up into folds running east and west, and on the southern flank of one of these folds there was sea in Upper Devonian times, also replete with life. This sea-bed rising, its sediment, consolidated into shale, remained for long ages a ridge of land stretching across Middlesex and the south of Hertfordshire, the highest part of this land being the Silurian hills on the north. Further crumpling or folding in nearly the same direction as before affected this Devono-Silurian tract so that the portion of it which has been dis-

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covered nearly 1,000 feet beneath the surface in south-east Herts has the Devonian rock tilted 25° from the horizontal, and the Silurian about 40° . Whilst great changes in the relative distribution of land and sea were taking place elsewhere in Britain during Carboniferous, Permian, Triassic, and earlier Jurassic times, we have no evidence that this tract sank entirely beneath the sea until we come to the Upper Cretaceous period ; but the submergence of its north-western flanks began in Upper Jurassic times ; in Lower Cretaceous the sea had reached almost to its highest point ; and it was entirely submerged during the whole of the Upper Cretaceous period, except perhaps towards the close of the deposition of the Chalk. Whether it was a land-area whilst the higher beds of the Upper Chalk were forming in the south of England, and still later whilst the Maestricht Beds of Germany were being deposited, we have no evidence to decide, but we do know that a vast amount of chalk has been carried away. Most probably it is the higher beds of the English Chalk only which have been removed by denudation, Hertfordshire, with the rest of the British region, being above the sea when the Maestricht Chalk was deposited.

In early Eocene times Hertfordshire was again beneath the sea, but not at first deeply submerged. Scotland, Ireland, Wales, and the north and extreme west of England formed parts of a land-area from which sediment was brought down by rivers flowing towards the west, and for a time the climate was tropical. As the land again rose the climate became temperate, and in the Miocene period there was much volcanic activity in the north-west of Britain which probably caused some disturbance of the strata in our area. In the Pliocene period the county was apparently subjected to a vast amount of sub-aërial denudation, and then the sea encroached upon it and its diversified surface was levelled to a considerable extent into a plain of marine denudation. With the next rise of the land the climate became of arctic severity and a great ice-sheet came from the north as far as the range of London Clay hills, still further levelling the land by its erosive action. Submergence followed, and the climate became milder, but only to again become arctic with partial emergence. As the land continued to rise however, and the surface began to assume its present aspect, the climate gradually became temperate, and the most important event of all in the history of the county came to pass—the advent of man by migration from the south. It was at about this time also that England was finally severed from the continent of Europe by the formation of the Straits of Dover. The rainfall then was heavy, much of our present land was under water, our rivers rose higher up their valleys and were often in flood, streams ran down our present dry valleys or combes, and most of the county was densely wooded. Man then, probably naked and living much in trees by the margins of lakes or swamps, had to contend with the wild beasts for existence with no other weapons than such as might be made by chipping one flint with another ; or perhaps to seek safety first in climbing trees, and then, gaining some insight into constructive art, by

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driving piles into the beds of lakes and building his dwellings upon them. By this time he began to take a pride in chipping his flint weapons more carefully than was necessary for the use to which they were put, and then, with infinite patience, finely polishing them.

At this stage Geology merges into Pre-historic Archæology.¹

HYDRO-GEOLOGY

The Chalk is our great water-bearing stratum ; firstly owing to its pervious nature, the whole of it being permeable, but its permeability or water-bearing capacity decreasing towards its base ; and secondly because the water contained in it is held up by the Gault clay on which it rests, the Upper Greensand, which usually in other districts separates these two formations, either being absent or reduced to a thin bed. The permeable Chalk and the underlying impermeable Gault dip from north-west to south-east, the gradient being at least 60 feet to the mile in the north-west and 30 feet to the mile in the south-east. The inclination of our valleys, and consequently of our rivers and of the surface of the underground water in the Chalk, is less than this, varying from about 24 feet to the mile in the north-west to about 12 feet to the mile in the south-east. In each valley the plane of permanent saturation in the Chalk, whilst sloping downwards along the course of the river, or longitudinally, with an inclination at least equal to that of the river, also slopes downwards to the river from the limit of its watershed above its source and on either side, or transversely, with an inclination less, and usually much less, than that of the sides and head of the valley. Water therefore stands lowest in the Chalk along the rivers, wherever there are springs which feed the rivers, or where the plane of saturation is artificially lowered by the water being pumped up from wells, or, generally speaking, wherever there is an outlet for it, and highest along the water-partings of the various catchment-basins, but not always exactly along them, for wherever there is a large abstraction of water from the Chalk, the plane of saturation must be lowered and the subterranean basin enlarged, causing the water-parting underground to recede beyond the water-parting above ground.

Nearly all our rivers derive most of their supply of water from the Chalk, instead of from surface-drainage as do rivers flowing over clay or other impermeable strata, and therefore they are not dependent upon a continuous rainfall, but throughout almost the whole of the year mainly upon the rain which falls during the winter months. From experiments with percolation-gauges at Nash Mills near Hemel Hempstead, and at Lea Bridge, it has been ascertained that in the six summer months about 6 per cent. of the rain which falls finds its way through three feet of soil or chalk with grass growing on the surface, and in the six winter months

¹ The author desires to express his indebtedness to Sir John Evans, Mr. Richard Lydekker and Mr. H. B. Woodward for their kindness in reading the proof of this article.

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about 46 per cent., these figures being the average results of a soil- and a chalk-gauge at Nash Mills and a soil-gauge at Lea Bridge, and the greatest difference between the average values given by either of the three gauges being 2 per cent. in the summer and 3 per cent. in the winter. The average annual percolation is therefore 26 per cent. of the rainfall. Assuming the average annual rainfall in Hertfordshire to be 26 inches, this being the average for half a century ending 1892, and also that this is equally divided between summer and winter, which it is very nearly, we have 0.78 inch percolating in the summer and 5.98 inches in the winter, giving an annual percolation of 6.76 inches. The difference between the summer and the winter percolation is due to so much of the rain being evaporated and absorbed by vegetation in the summer. It cannot be said that the whole of the water which goes down three feet into the soil reaches the plane of saturation, but the moisture which is brought up from a greater depth by absorption into the roots of trees or by capillary action cannot be so great as to materially affect these figures.

It might be thought that our rivers would be highest in the winter and lowest in the summer, but such is not the case. Owing to the slowness of the percolation the surface of the plane of saturation rises for a considerable time after the rain has fallen, and consequently our rivers have in them the greatest volume of water in the spring and the least in the autumn.

To the amount of rain which percolates through the Chalk should be added that which runs off the surface of the impermeable strata. It is very difficult to form any estimate of this. There must be much more evaporation from the surface of impermeable beds than from the surface of permeable beds, for wherever water stands it must be exposed much longer to evaporating influences than when it sinks beneath the surface. If it be assumed that impermeable beds yield with ordinary or not very heavy rainfall, half the amount of water that permeable beds do, we shall probably be very near the mark.

The yield of the catchment-basins of the two principal rivers of Hertfordshire, the Colne and the Lea, is a question of much importance in connection with the water-supply of London. It would occupy too much space to go fully into this matter here, and for a detailed examination of it reference should be made to a paper by the present writer.¹ It has there been shown that, irrespective of our county boundary, the area of permeable strata in the basin of the Colne above Harefield is about 148 square miles and of impermeable strata about 87 square miles, and that the area of permeable strata in the basin of the Lea above Feilde's Weir is about 224 square miles and of impermeable strata about 186 square miles; also that the probable yield from percolation through the Chalk is about 45 million gallons per diem in the Colne basin and 54 million in the Lea basin, and from water running off the surface of impermeable beds about 12½ million gallons per diem in the Colne basin

¹ Hopkinson, 'Hertfordshire Rainfall, Percolation, and Evaporation,' *Trans. Herts Nat. Hist. Soc.*, vol. ix. pp. 33-72, pl. i. (1896).

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and 20½ in the Lea basin, giving a total average yield for the two basins of about 132 million gallons of water per diem. Also that in three successive years the average annual supply from these two catchment-basins may be from 35 to 40 per cent. less than this average, and in six successive years about 25 per cent. less. In the same paper the inference is drawn that too much water is being taken by the New River and East London Water Companies from the basin of the Lea for the welfare of our county, and that the same would be the case in the basin of the Colne if water were supplied to London from near Harefield as has been proposed. That the plane of saturation in the valley of the Lea is being unduly lowered artificially, which can only be by excessive pumping from the deep wells of these companies, is shown by the following table which gives the average rainfall in Hertfordshire and average flow of the Chadwell Spring near Ware for twenty-four years in six-yearly periods, with ratios to the rainfall of 1842 to 1899 (April to March), and to 3,600,000 gallons per diem as the accepted mean flow of the spring up to at least the year 1874. The last column shows how the flow is rapidly decreasing in relation to the annual rainfall.

RAINFALL IN HERTFORDSHIRE AND FLOW OF THE CHADWELL SPRING COMPARED

| Period | Hertfordshire Mean Rainfall | | | | | | Flow of Chadwell Spring | | Spring to Rain- fall |
|---------|-----------------------------|-------|--------|-------|-------|-------|----------------------------|-------|-------------------------------|
| | Summer | | Winter | | Year | | | | |
| | ins. | ratio | ins. | ratio | ins. | ratio | gals. per diem | ratio | ratio |
| 1875-81 | 16·85 | 129 | 14·57 | 111 | 31·42 | 120 | 3,640,000 | 101 | 84 |
| 1881-87 | 12·77 | 98 | 14·71 | 112 | 27·48 | 105 | 3,073,000 | 85 | 81 |
| 1887-93 | 13·10 | 100 | 12·07 | 92 | 25·17 | 96 | 2,644,000 | 73 | 76 |
| 1893-99 | 11·15 | 85 | 13·52 | 103 | 24·67 | 94 | 2,056,000 | 57 | 61 |

Some of our rivers vary greatly throughout the year, and from one year to another, in the position of their source. After a winter of heavy rainfall the inclination of the plane of saturation in the Chalk is raised, and cuts the bed of the river near the head of its valley ; but after a winter of small rainfall, and in the summer and to a greater extent in the autumn, the inclination of this plane is less, and cuts the bed of the river some distance down its valley ; and wherever the plane of saturation rises into or cuts a river-bed on the permeable Chalk, there is the source of the river for the time being. The Ver is a good example of these variable rivers, in some years rising above Markyate Street, and in others below Redbourn.

Rivers which are called 'bournes' are merely extreme instances of this phenomenon. Such rivers only flow occasionally after a very heavy rainfall, and especially when a wet winter is preceded by a prolonged wet period. They usually begin to flow in the spring, as soon as the rain has had time to percolate through the Chalk to its plane of satura-

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tion and to raise this plane to a steeper inclination than that of the bottom of their usually dry valleys, this frequently happening some time after all heavy rain has ceased ; they cease to flow when they have conveyed away a sufficient quantity of water to reduce the level of the plane of saturation to that of their beds. Our Hertfordshire Bourne¹ is a tributary of the Bulbourne, into which it flows, occasionally, at Bourne End, a small hamlet about half-way between Berkhamsted and Boxmoor. It sometimes has its source about four miles up its valley, and it has been known to run in such a powerful stream as to overflow the usually dry culvert under the road at Bourne End, and to flood this road. The Bourne flowed about once in every seven years between 1852 and 1873, and about once every alternate year from 1873 to 1883. It has only flowed since then in 1897, after an interval of quiescence of fourteen years. On each of these occasions the mean rainfall in Hertfordshire for the twelve months ending 31st March of the year of flow exceeded 30 inches.

The 'bourne,' if such it may be called, which occasionally forms the source of the Colne, is one of a very different kind. For a certain distance it flows over the London Clay and therefore always runs with or after rain, but where it leaves this impervious bed for the Chalk it usually ends, at least on the surface, giving to that place the name of 'Waterend.' It disappears in a 'swallow-hole' in the Chalk. If this cannot take it all there is another ready a little farther on, and so on as far as the swallow-holes at Potterells near North Mimms. Seldom does any water get beyond these great chasms, down one of which at least a man might be carried ; but sometimes they cannot take it all, not because they have not sufficient capacity, but because they are full owing to the plane of saturation having risen in the Chalk up to their capacious mouths. Then there is a flood, the river forms a lake hiding the swallow-holes from view, and the bed of the Colne, dry for some distance below this point year after year, is unable to carry off all the water, its banks overflowing, submerging the meadows, and rendering some of the roads between Colney Heath and Smallford impassable. The water which sinks into these swallow-holes is probably conveyed in channels in the Chalk into the lower part of the valley of the Lea, for that would be its direction if it follows the dip of the Chalk. There are several interesting questions connected with this phenomenon which have been discussed elsewhere.²

We have also many valleys, sometimes several miles in extent, down which rivers have not been known to run in historic times. Such dry valleys are merely elongated Chalk combes. They were probably formed when the impermeable Tertiary beds extended over the permeable

¹ Evans, 'The Hertfordshire Bourne,' *Trans. Watford Nat. Hist. Soc.*, vol. i. p. 137 (1877); Littleboy, 'The River Bourne,' *Trans. Herts Nat. Hist. Soc.*, vol. ii. p. 237 (1883); Hopkinson, 'The Chadwell Spring and the Hertfordshire Bourne,' *op. cit.* vol. x. p. 69 (1899). The above explanation of the flowing of the Bourne is from the paper by Sir John Evans.

² Hopkinson, 'The River Colne and the Swallow-holes at Potterells,' *Trans. Herts. Nat. Hist. Soc.*, vol. vi. p. xxix. (1892).

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Cretaceous, at which time a great part of the rainfall would collect on the clay and form into streams which would cut deep channels in it and through it into the underlying Chalk, instead of a small part of the rain percolating through the Chalk and the greater part evaporating or being absorbed by vegetation, as at the present time ; or perhaps later, after the Tertiaries had been removed, when the moister climate and consequent higher plane of saturation of the Chalk would suffice, as under the former supposition, to cause rivers to flow in our now dry valleys. But since the removal of the Tertiaries by denudation, or the lowering of the plane of saturation by the drier climate and the artificial abstraction of water by means of wells sunk into the Chalk, these valleys have probably been and are still being deepened by the Chalk being dissolved and carried away by percolation in the manner previously mentioned. In some instances the plane of saturation occasionally rises to the bottom of these valleys, when a little water may be found in them in places, as in one near Watford on the west of The Grove and Cassiobury Park, but as a rule the water-level in the Chalk is now permanently below the lowest points in these valleys.

Under natural conditions in any Chalk area there must be a slight tendency for the plane of saturation to become lower, owing to the loss of internal heat by our earth allowing of water percolating further into it, and to the gradual reduction in the rainfall from causes which need not be considered here, but these are secular changes which must be altogether imperceptible to us. The removal of the forests which once covered most of our county was the first artificial aid which man, far too prone to interfere with his Maker's provident arrangements for his comfort and welfare, gave to the acceleration of this natural process ; the deep drainage of the land followed, causing water to flow away more rapidly, and thus giving it less time to sink into the Chalk ; but nothing could possibly have a more prejudicial effect upon our enjoyment of the country and upon such of our industries as are dependent upon a plentiful water-supply, than the folly of which certain water companies are guilty of taking water out of our underground Chalk reservoir more rapidly than it flows into it. By thus emptying it from the bottom a void is created which must be filled up from the top, and the certain result follows that our watercress-beds, which should yield our most valuable natural produce next to agriculture which is also prejudicially affected, become dry, our water-power decreases, and our rivers cease to flow in the higher part of their courses. The water companies are thus continually adding to the extent, and may eventually add to the number, of the dry valleys of Hertfordshire.

CLIMATE

SOME of the principal elements of the climate of Hertfordshire may be ascertained by examining maps in a meteorological atlas, such as the *Meteorological Atlas of the British Islands* issued by the Meteorological Council, or the splendid *Atlas of Meteorology* recently published which forms volume iii. of Bartholomew's *Physical Atlas*.¹ Here for instance may be ascertained approximately the monthly as well as the annual temperature and rainfall of the county, with the advantage of easy comparison with the same elements of the climate of other parts of the British Isles, of Europe, or of the world. But climate is such a complex phenomenon that any views thus formed must be wanting in definiteness. Not only have we to consider the rainfall, temperature, humidity, amount of cloud, and direction of the wind, but also the nature of the soil, the extent of water, of woods, of barren heaths and cultivated land, and the presence or absence of manufacturing districts.

More than three centuries ago Norden said of Hertfordshire : 'The ayre for the most part is very salutarie, and in regard thereof many sweete and pleasant dwellinges, healthfull by nature and profitable by arte and industrie, are planted there.'² Sixty-five years later Fuller remarked : 'It is the garden of England for delight, and men commonly say that such who buy a house in Hertfordshire pay two years' purchase for the aire thereof.'³ Thus the salubrity of Hertfordshire had by then become proverbial, and the county is certainly favoured from a hygienic point of view, having a dry soil, being hilly though not mountainous, with a great extent of surface considerably elevated above sea-level, being well watered with numerous rivers deriving their supply chiefly from springs in the Chalk, and therefore pure, being well wooded, having many parks and country seats, a fair proportion of uncultivated land forming gorse-covered commons, and wide stretches of grass on each side of many of its roads (roadside wastes), and also by the absence of manufacturing towns. There is no industry which interferes with the purity of the air, and the only manufacturing process by which the rivers are contaminated is that of paper-making. There are several

¹ *The Physical Atlas*, by J. G. Bartholomew, F.R.G.S. (London : Archibald Constable & Co., Ltd.). In progress.

² *The Description of Hartfordshire*, p. 2 (1597).

³ *The Worthies of England*, part 2, p. 17 (1662).

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paper-mills in the valleys, and by the refuse carried into the rivers their water is frequently rendered turbid and their fish have sometimes been killed. This does not occur however to any great degree, and no better gauge of the general purity of the rivers of Hertfordshire can be found than the extent to which watercresses are cultivated. For them to thrive the water must be clear, it must flow from gravel or chalk, and there must be a constant gentle stream.

The chief elements of climate are rainfall and temperature. The mean temperature of a district of small area compared with that of the country in which it is situated is chiefly governed by its lateral or geographical position, the mean rainfall by its vertical or orographical position, both elements being greatly influenced by aspect. Thus a slope facing south will generally be warmer and have a greater range of temperature than a northern slope, and a slope facing west or south-west will generally have a greater rainfall than an eastern or north-eastern slope. The general south-eastern inclination of the surface of the county is perhaps too slight to affect the temperature, but the rainfall is greatly affected by the form of the ground, the southern and western hills attracting the rain, which chiefly comes from the south-west, so greatly that with a mean annual rainfall for the whole of the county of about 26 inches, there is a difference of $3\frac{1}{2}$ inches between the rainfall of the river-basin of the Colne on the west and that of the river-basin of the Lea on the east, the former having 28 inches and the latter $24\frac{1}{2}$ inches. (The mean of these is $26\frac{1}{4}$ inches but that is reduced to 26 inches by the disparity of area, the Lea basin being much larger than the Colne.)

There have been published annually in the *Transactions of the Hertfordshire Natural History Society* some of the results of observations taken at five meteorological stations during the twelve years 1887 to 1898. It is believed that this period is a sufficiently long one, and that the stations are sufficiently numerous and widely-distributed, for the results of the observations to be of value in enabling us to arrive at a knowledge of the chief elements of the climate of the county except the rainfall. To deduce the average rainfall over an area of 630 square miles, and to form an idea of the extremes, five stations are inadequate, and the period of twelve years is much too short. Although therefore the rainfall is tabulated from these observations, additional tables will be given showing certain features of the rainfall at a much larger number of stations for periods varying from thirty to sixty years.

The five meteorological stations are Royston, Berkhamsted, St. Albans, Bennington, and New Barnet, the first of these no longer existing. At all these stations observations have been taken in a uniform manner with verified instruments similarly placed except as to the exposure of the thermometers for ascertaining the temperature of the air in the shade. At Bennington, St. Albans, and Berkhamsted the thermometers are in 'Stevenson' louver-boarded screens in accordance with the regulations of the Royal Meteorological Society; at Royston and New Barnet under 'Glaisher' open screens as at most of the stations

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contributing to the *Quarterly Weather Reports* of the Registrar-General. The 'Stevenson' screen affords a complete protection from the effects of radiation by which the thermometers under the 'Glaisher' screen are cooled below the temperature of the air at night, and of reflection by which those in a 'Glaisher' screen may be heated above the temperature of the air on sunshiny days. The result is that while the observations at Berkhamsted, St. Albans, and Bennington are strictly comparable, the greater range of temperature shown at Royston and New Barnet is due, at least for the most part, to the exposure of the thermometers and not to any actual excess in the range at these two places. From experiments which have been made with the two kinds of screens it appears that it is only in the range of temperature that they give divergent results, the determination of the mean temperature not being sensibly affected.

All the observations which are here utilized have been taken at 9 a.m., and entered to the day of observation, except the maximum temperature and the rainfall which are entered to the previous day. The regulation that the thermometers should be 4 feet above the ground and over grass has in all cases been adhered to.

The position of the stations, and the names of the observers, etc., are as follows :—

Royston (London Road).—Latitude : $52^{\circ} 2' 34''$ N. Longitude : $0^{\circ} 1' 8''$ W. Altitude : 301 feet. Observer : (the late) Hale Wortham, F.R.Met.Soc. Rain-gauge 8 inches in diameter, rim 6 inches above the ground. The observations were discontinued on the death of the observer early in the year 1899. The instruments were on the east side of, and not far from the house, the ground sloping down towards the east, and the exposure being sufficiently open.

Berkhamsted (Rosebank).—Latitude : $51^{\circ} 45' 40''$ N. Longitude : $0^{\circ} 33' 30''$ W. Altitude : 400 feet. Observer : Edward Mawley, Sec. R.Met.Soc. Rain-gauge 8 inches in diameter, rim 1 foot above the ground. The instruments are some distance from the house on ground sloping down towards the south-west, the situation being quite open. There are numerous meteorological instruments, including several which are self-recording, this being one of the most perfectly equipped meteorological observatories in this country.

St. Albans (The Grange).—Latitude : $51^{\circ} 45' 9''$ N. Longitude : $0^{\circ} 20' 7''$ W. Altitude : 380 feet. Observer : John Hopkinson, F.R.Met.Soc. Rain-gauge 5 inches in diameter, rim 1 foot above the ground. Full particulars of this station, a very open situation, with a complete record of the observations from 1887 to 1896, have been given by the observer in a paper on 'The Climate of St. Albans' in the *Transactions of the Hertfordshire Natural History Society* (vol. ix. pp. 215–228). The observations were discontinued here early in the year 1900 owing to the removal of the observer from St. Albans to Watford. They are continued at the Hertfordshire County Museum, St. Albans, to which institution the thermometers, thermometer-screen, and

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rain-gauge have been presented, with the object of securing the permanence of the station.

Bennington (Bennington House).—Latitude : $51^{\circ} 53' 45''$ N. Longitude : $0^{\circ} 5' 20''$ W. Altitude : 407 feet. Observer : Rev. J. D. Parker, LL.D., F.R.Met.Soc. Rain-gauge 5 inches in diameter, rim 1 foot above the ground. The instruments are a considerable distance from the house and in a very exposed situation on the high ground overlooking a great extent of undulating country on the north and east. The situation is a very fine one and admirably adapted for showing what is the climate of the Chalk hills of the north of the county. There are numerous meteorological instruments.

New Barnet (Gas Works).—Latitude : $51^{\circ} 38' 5''$ N. Longitude : $0^{\circ} 10' 15''$ W. Altitude : 212 feet. Observer : T. H. Martin, M.Inst.C.E. Rain-gauge 8 inches in diameter, rim 1 foot above the ground. The instruments are near the office of the Barnet Gas Company, apparently in a rather damp situation. Although not an ideal one for the purpose, it well represents the London Clay district on the north of London. This is the only Hertfordshire meteorological station which is not on the Chalk.

There is not one of the home counties which is better supplied, for its area, with meteorological stations than is Hertfordshire, notwithstanding the discontinuance of the Royston station, and the observatories are wide apart, and represent hill and valley, and chalky, gravelly, and clayey soils.

Tables I. to IV. give some of the results of observations taken at these five stations during the twelve years 1887 to 1898. The annual means, with extremes of temperature, are given in Table I. The mean temperature of 48.3° is very little departed from at any station, Royston only showing a greater departure than 0.3° . It is remarkable that this, the most northern station, should have a mean temperature 0.7° higher than that of any of the other four places. There is a very close agreement between the mean minimum (or night) temperature at each station except New Barnet where it is 1.9° below the mean of the other four : this is probably due in part to the kind of screen used, but chiefly to the low position and the nature of the subsoil, London Clay, which retains moisture and induces ground-fogs by which the air is rendered colder at night than it would be in a higher position and on a drier stratum. The clay is however here capped by a thin stratum of gravel. The mean maximum (or day) temperatures are in still closer agreement, the excess at Royston and New Barnet being fully accounted for by the 'Glaisher' stand being used at these two places. This, as already mentioned, accounts for the greater range of temperature at Royston and New Barnet than at Berkhamsted, St. Albans, and Bennington. The only other point in this table calling for remark is the small number of rainy days registered at New Barnet owing to the omission of the measurement of small falls of rain and snow, but this does not affect the amount registered.

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TABLE I

RESULTS OF CLIMATOLOGICAL OBSERVATIONS FOR EACH STATION, 1887-98

| Stations | Temperature of the Air | | | | | | Hu- midity Per cent. | Cloud, 0-10 | Rain | |
|------------------|------------------------|--------------|--------------|---------------|--------------|--------------|-----------------------------------|----------------|----------------|------|
| | Means | | | | Extremes | | | | Amount ins. | Days |
| | Mean deg. | Min. deg. | Max. deg. | Range deg. | Min. deg. | Max. deg. | | | | |
| Royston . . . | 49°0 | 40°8 | 57°1 | 16·3 | 3·5 | 93°0 | 83 | 6·7 | 22·21 | 161 |
| Berkhamsted . . | 48°1 | 40°3 | 55°8 | 15·5 | 7·5 | 91°0 | 82 | 7·2 | 25·60 | 176 |
| St. Albans . . . | 48°3 | 41°1 | 55°4 | 14·3 | 10°1 | 91°0 | 82 | 6·7 | 26·00 | 181 |
| Bennington . . . | 48°0 | 40°7 | 55°3 | 14·6 | 9°5 | 90°9 | 81 | 7·3 | 23·89 | 182 |
| New Barnet . . | 48°1 | 38°8 | 57°5 | 18·7 | 1°0 | 94°5 | 83 | 6·2 | 23·73 | 139 |
| County . . . | 48°3 | 40°3 | 56·2 | 15·9 | 1°0 | 94°5 | 82 | 6·7 | 24·29 | 168 |

Tables II., III., and IV. give the means at these five stations of the same elements of climate (air-temperature, humidity, cloud, and rain), with the extremes of temperature, for each of the twelve years, for the average of the twelve years in each season and in each month, and the annual results for the whole period, which of course are the same as in the first table. It will be seen that the second half of this period was much warmer than the first half, had a greater range of temperature, both mean daily and absolute, a drier air, a little brighter sky, and a rather smaller rainfall.

TABLE II

RESULTS OF CLIMATOLOGICAL OBSERVATIONS FOR EACH YEAR, 1887-98

| Year | Temperature of the Air | | | | | | Hu- midity | Cloud, 1-10 | Rain | |
|----------|------------------------|--------------|--------------|---------------|--------------|--------------|---------------|----------------|----------------|------|
| | Means | | | | Extremes | | | | Amount ins. | Days |
| | Mean deg. | Min. deg. | Max. deg. | Range deg. | Min. deg. | Max. deg. | | | | |
| 1887 | 47.0 | 38.9 | 55.1 | 16.2 | 8.0 | 89.4 | 81 | 6.5 | 19.07 | 151 |
| 1888 | 47.0 | 39.9 | 54.1 | 14.2 | 14.6 | 86.5 | 85 | 7.4 | 24.94 | 184 |
| 1889 | 47.8 | 40.5 | 55.2 | 14.7 | 12.7 | 85.0 | 85 | 7.0 | 27.09 | 179 |
| 1890 | 47.9 | 40.0 | 55.8 | 15.8 | 4.3 | 83.7 | 83 | 6.8 | 22.40 | 170 |
| 1891 | 47.5 | 39.7 | 55.3 | 15.6 | 7.5 | 83.4 | 84 | 6.7 | 28.58 | 187 |
| 1892 | 47.0 | 38.9 | 55.0 | 16.1 | 11.0 | 86.0 | 82 | 6.5 | 25.02 | 166 |
| 1893 | 50.0 | 41.0 | 59.1 | 18.1 | 12.0 | 94.5 | 78 | 6.0 | 22.28 | 152 |
| 1894 | 49.0 | 41.4 | 56.6 | 15.2 | 4.0 | 85.0 | 83 | 6.7 | 27.58 | 192 |
| 1895 | 48.1 | 39.6 | 56.6 | 17.0 | 1.0 | 86.9 | 81 | 6.5 | 24.08 | 150 |
| 1896 | 48.9 | 41.0 | 56.9 | 15.9 | 15.0 | 89.5 | 82 | 6.9 | 26.09 | 165 |
| 1897 | 49.1 | 41.3 | 56.9 | 15.6 | 15.0 | 88.8 | 82 | 7.1 | 24.76 | 163 |
| 1898 | 50.2 | 42.0 | 58.3 | 16.3 | 16.0 | 91.8 | 81 | 6.9 | 19.57 | 155 |
| Mean . . | 48.3 | 40.3 | 56.2 | 15.9 | 10.1 | 87.5 | 82 | 6.7 | 24.29 | 168 |

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TABLE III

SEASONAL RESULTS OF CLIMATOLOGICAL OBSERVATIONS, 1887-98

| Seasons | Temperature of the Air | | | | | | Hu- midity | Cloud, 0-10 | Rain | | |
|--------------|------------------------|--------------|--------------|---------------|--------------|--------------|---------------|----------------|--------------|----------------|------|
| | Means | | | | Extremes | | | | Per cent. | Amount ins. | Days |
| | Mean deg. | Min. deg. | Max. deg. | Range deg. | Min. deg. | Max. deg. | | | | | |
| Spring . . . | 46·6 | 37·5 | 55·6 | 18·1 | 9·0 | 86·6 | 79 | 6·5 | 5·03 | 39 | |
| Summer . . . | 60·2 | 50·4 | 70·0 | 19·6 | 29·0 | 94·5 | 75 | 6·6 | 6·93 | 40 | |
| Autumn . . . | 49·2 | 41·8 | 56·6 | 14·8 | 15·0 | 91·8 | 86 | 6·6 | 7·29 | 45 | |
| Winter . . . | 37·2 | 31·7 | 42·7 | 11·0 | 1·0 | 65·3 | 89 | 7·2 | 5·04 | 44 | |

TABLE IV

MONTHLY RESULTS OF CLIMATOLOGICAL OBSERVATIONS, 1887-98

| Months | Temperature of the Air | | | | | | Hu- midity Per cent. | Cloud, 0-10 | Rain | |
|----------------|------------------------|--------------|--------------|---------------|--------------|--------------|-----------------------------------|----------------|----------------|------|
| | Means | | | | Extremes | | | | Amount ins. | Days |
| | Mean deg. | Min. deg. | Max. deg. | Range deg. | Min. deg. | Max. deg. | | | | |
| January . . . | 36·1 | 31·1 | 41·1 | 10·0 | 4·0 | 59·8 | 90 | 7·5 | 1·62 | 16 |
| February . . . | 37·7 | 31·5 | 43·8 | 12·3 | 1·0 | 65·3 | 87 | 7·0 | 1·31 | 12 |
| March . . . | 41·2 | 33·4 | 49·0 | 15·6 | 9·0 | 68·0 | 83 | 6·7 | 1·95 | 15 |
| April. . . . | 46·2 | 36·7 | 55·7 | 19·0 | 17·8 | 82·9 | 78 | 6·5 | 1·31 | 12 |
| May | 52·3 | 42·4 | 62·2 | 19·8 | 21·0 | 86·6 | 75 | 6·3 | 1·77 | 12 |
| June | 59·0 | 48·8 | 69·3 | 20·5 | 29·0 | 90·0 | 75 | 6·6 | 1·73 | 11 |
| July | 61·0 | 51·3 | 70·8 | 19·5 | 34·0 | 90·3 | 74 | 6·7 | 2·54 | 14 |
| August . . . | 60·6 | 51·1 | 70·0 | 18·9 | 33·1 | 94·5 | 76 | 6·4 | 2·66 | 15 |
| September . . | 56·6 | 47·6 | 65·7 | 18·1 | 25·8 | 91·8 | 82 | 6·0 | 1·91 | 12 |
| October . . . | 48·0 | 40·6 | 55·4 | 14·8 | 16·0 | 74·3 | 87 | 6·4 | 2·89 | 17 |
| November . . | 43·0 | 37·3 | 48·7 | 11·4 | 15·0 | 64·0 | 90 | 7·5 | 2·49 | 16 |
| December . . | 37·9 | 32·5 | 43·2 | 10·7 | 4·3 | 59·0 | 90 | 7·1 | 2·11 | 16 |
| Year. . . . | 48·3 | 40·3 | 56·2 | 15·9 | 1·0 | 94·5 | 82 | 6·7 | 24·29 | 168 |

In dividing the year into seasons, March, April, and May are considered as spring; June, July, and August as summer; September, October, and November as autumn; and December, January, and February as winter.

Autumn is warmer than spring by 2·6°, almost entirely owing to the colder nights in spring, but the excess of temperature of summer over that of winter is much more due to the warm days in summer than to the cold nights in winter. Spring is 9·4° warmer than winter, and summer is 13·6° warmer than spring; autumn is 11·0° colder than summer, and winter is 12·0° colder than autumn. Thus the transition from spring to summer is the greatest, and that from winter to spring is the least. Autumn and winter are much more humid than spring and summer, but the rainfall is much greater in summer and autumn than it

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is in winter and spring ; autumn and winter, however, have a greater number of wet days than spring and summer.

January is on the average the coldest month, and July the warmest. Assuming that the mean temperature of each month occurs about the middle of the month, it would appear that the increase of temperature is most rapid during the month of May, and that the decrease is most rapid during September and October. In two months only, July and August, has the temperature never been below freezing-point (32°), and in two months only, December and January, has it never exceeded 62° .

Tables V., VI., and VII. give particulars of the rainfall for the longest available period under each heading. A day of rain is one on which at least 0.01 in. of rain falls, any fall of 0.005 in. to 0.009 in. being considered as 0.01 in.

TABLE V
MEAN AND EXTREME RAINFALL FOR 60 YEARS (1840-99)

| Months | Mean Rainfall | | | | | | | Extreme | |
|------------|----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|-----------------|--------------|--------------|
| | 1 station 1840-49 | 2 stations 1850-59 | 7 stations 1860-69 | 12 stations 1870-79 | 18 stations 1880-89 | 20 stations 1890-99 | Mean 1840-99 | Min. 1854 | Max. 1852 |
| | inches | inches | inches | inches | inches | inches | inches | inches | inches |
| January . | 2.24 | 2.20 | 2.80 | 2.58 | 1.71 | 1.81 | 2.22 | 1.68 | 4.85 |
| February . | 1.92 | 1.19 | 1.67 | 1.82 | 1.95 | 1.37 | 1.65 | 1.14 | 1.26 |
| March . | 1.51 | 1.25 | 2.04 | 1.67 | 1.58 | 1.82 | 1.65 | .28 | .31 |
| April . . | 1.54 | 1.88 | 1.50 | 2.05 | 1.91 | 1.26 | 1.69 | .77 | .76 |
| May . . | 2.08 | 2.22 | 2.18 | 2.13 | 2.06 | 1.66 | 2.06 | 3.58 | 2.14 |
| June . . | 1.71 | 2.06 | 2.39 | 2.34 | 1.99 | 1.79 | 2.05 | .85 | 4.28 |
| July . . | 2.12 | 3.15 | 1.86 | 2.64 | 2.74 | 2.39 | 2.48 | 1.72 | 3.94 |
| August . | 2.30 | 2.55 | 2.55 | 2.60 | 1.92 | 2.75 | 2.44 | 1.87 | 3.93 |
| September | 2.45 | 2.00 | 2.47 | 2.64 | 2.60 | 1.96 | 2.35 | .55 | 3.21 |
| October . | 3.34 | 3.22 | 2.39 | 2.56 | 3.18 | 3.09 | 2.96 | 2.33 | 4.06 |
| November | 2.85 | 2.23 | 2.10 | 2.76 | 2.84 | 2.56 | 2.56 | 1.37 | 6.27 |
| December | 1.76 | 1.55 | 2.16 | 2.18 | 2.26 | 2.32 | 2.04 | 1.53 | 2.58 |
| Year . . | 25.82 | 25.50 | 26.11 | 27.97 | 26.74 | 24.78 | 26.15 | 17.67 | 37.59 |

TABLE VI
MEAN NUMBER OF DAYS OF RAIN FOR 30 YEARS (1870-99)

| Months | 1870-79 | 1880-89 | 1890-99 | 1870-99 | Months | 1870-79 | 1880-89 | 1890-99 | 1870-99 |
|------------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|
| January . | 16 | 14 | 16 | 15 | July . . | 13 | 15 | 13 | 14 |
| February . | 15 | 13 | 12 | 13 | August . | 14 | 13 | 15 | 14 |
| March . | 14 | 11 | 14 | 13 | September | 13 | 13 | 12 | 13 |
| April . . | 13 | 14 | 12 | 13 | October . | 15 | 16 | 16 | 16 |
| May . . | 13 | 12 | 12 | 12 | November | 16 | 16 | 15 | 16 |
| June . . | 14 | 11 | 12 | 12 | December | 15 | 16 | 16 | 16 |
| | | | | | Year . . | 171 | 164 | 165 | 167 |

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TABLE VII

MEAN RAINFALL IN EACH DISTRICT, WITH ITS RELATION TO COUNTY MEAN

| River District | | 1860-69 | | 1870-79 | | 1880-89 | | 1890-99 | |
|----------------|-----------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| | | inches | per cent. | inches | per cent. | inches | per cent. | inches | per cent. |
| <i>Cam</i> : | Rhee . . . | 23'47 | - 10 | 23'55 | - 16 | 23'50 | - 12 | 22'37 | - 10 |
| <i>Ivel</i> : | Hiz . . . | 23'89 | - 9 | 25'61 | - 8 | 25'27 | - 5 | 23'61 | - 5 |
| <i>Thame</i> : | Up. Thame | — | — | — | — | — | — | 26'10 | + 5 |
| <i>Colne</i> | { Bulbourne . | 29'20 | + 12 | 31'00 | + 11 | 29'60 | + 10 | 25'94 | + 5 |
| | { Gade . . . | 26'29 | + 1 | 28'59 | + 2 | 28'46 | + 6 | 25'87 | + 5 |
| | { Ver . . . | 27'45 | + 5 | 29'56 | + 6 | 28'44 | + 6 | 26'35 | + 6 |
| | { Upper Colne . | — | — | — | — | — | — | 24'64 | = |
| | { Lower Colne . | — | — | 27'63 | - 1 | 30'98 | + 16 | 26'54 | + 7 |
| <i>Lea</i> | { Mimram . . | — | — | — | — | 25'58 | - 4 | 23'82 | - 4 |
| | { Beane . . . | — | — | 26'25 | - 6 | — | — | 24'61 | = |
| | { Rib . . . | — | — | — | — | 25'04 | - 6 | 24'22 | - 2 |
| | { Ash . . . | — | — | 26'24 | - 6 | 25'98 | - 3 | 24'82 | = |
| | { Upper Lea . | 25'01 | - 4 | 27'10 | - 3 | 24'69 | - 8 | 23'11 | - 7 |
| | { Lower Lea . | — | — | — | — | 27'78 | + 4 | 23'65 | - 5 |

During the last half-century there have been falls of rain of at least $2\frac{1}{2}$ inches in twenty-four hours on twelve occasions. On the 12th of July, 1889, such a fall occurred at eighteen stations out of thirty then recording, and at least $3\frac{1}{2}$ inches at four of these. Falls of at least 3 inches have occurred on seven occasions, and of at least $3\frac{1}{2}$ inches on 30th June, 1878 ; 12th July, 1889, the day with the greatest average rainfall at all stations ; and 17th July, 1890, the day with the greatest fall of rain at any one station, viz. 4'19 inches at Moor Park, Rickmansworth.

Two other elements of climate, viz., sunshine and wind, remain for consideration, but can only be very briefly noticed. The following are averages for the twelve years 1887-98 for wind at Berkhamsted, St. Albans, and Bennington, and for sunshine at Berkhamsted only.

The prevailing direction of the wind is from S.W. (sixty-one days in the year) to W. (sixty-two days), and the next most frequent winds are N. to N.E. and S. (each about thirty-seven days). The least frequent are S.E. (twenty-five days). About forty-four days in the year are recorded as calm. March is the most windy month, June the calmest.

The duration of bright sunshine is least in December and greatest in May; December having rather more than an hour a day, and May nearly six and a half hours. Throughout the year the sun shines brightly for nearly four hours a day.

PALÆONTOLOGY

HERTFORDSHIRE is a county singularly deficient in interest so far as the palæontology of vertebrated animals is concerned. Not only does it lack any fauna of extinct vertebrates peculiar to itself, but it is extremely poor in vertebrate remains of any description; its gravels being generally devoid of the teeth and bones of the larger mammals, while very few remains of the lower vertebrates appear to have been yielded (or at any rate recorded) from the chalk of the county.

There is however one very notable exception as regards the fossils of the chalk. This is an imperfect tooth of an iguanodont reptile from the Totternhoe stone near Hitchin described by Mr. E. T. Newton¹ under the provisional designation of *Iguanodon billi*. The iguanodons, it may be observed, form a group of gigantic extinct reptiles which walked exclusively on their three-toed hind limbs, and are specially characterized by the peculiar structure of their teeth. These latter have serrated margins and a sculptured external surface, and were adapted for a vegetable diet, wearing down by use after the manner of those of herbivorous mammals. The Hitchin specimen differs somewhat from the teeth of *Iguanodon mantelli* from the Sussex Wealden in the sculpture of the outer surface, and may possibly indicate a distinct generic type. It is of especial interest as being the most modern iguanodont fossil hitherto found in England; while it has a local interest on account of being the only vertebrate fossil hitherto described as peculiar to Hertfordshire.

If careful collecting of the fossils in the Hertfordshire chalk were undertaken it is probable that examples of many of the commoner kinds of Cretaceous fishes might be obtained. From the chalk of Tring the British Museum possesses seven teeth of the Cretaceous ray, scientifically known as *Ptychodus decurrens*; while the same collection likewise contains a lower median tooth of the allied species, *Pt. latissimus*, from the chalk of Hertford. *Ptychodus* teeth may be recognized by their quadrangular form and ridged centre; the margins of each tooth being minutely pustulated. They were arranged so as to form a pavement in the mouth, and were adapted to crush shellfish and crustaceans, like those of modern skates and rays.

Four teeth from the London Clay of Hertford preserved in the British Museum belong to a common Cretaceous shark, *Odontaspis elegans*. A fragmentary bone from the London Clay of Watford has

¹ *Geological Magazine*, decade iii. vol. viii. p. 49 (1892).

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been assigned by Sir Richard Owen¹ to the Ungulate genus *Hyracotherium*, but the specimen has unfortunately been lost, so that the determination cannot be verified.

As already mentioned, mammalian remains appear to be very scarce in the gravels of the county. In 1858 however the late Sir J. Prestwich² recorded the occurrence of a molar and tusk of an elephant (probably the mammoth) at Bricket Wood near Watford. And the present writer has been shown antlers of the red deer (*Cervus elaphus*) from a gravel bed at Haileybury, where other mammalian remains are said to occur. As mentioned in the chapter on the geology of the county, bones of the reindeer (*Rangifer tarandus*), mammoth (*Elephas primigenius*), and woolly rhinoceros (*Rhinoceros antiquitatis*) have been disinterred from beneath a bed of brickearth at Camp's Hill. Mr. J. V. Elsdon³ also mentions that mammalian bones are occasionally met with in the gravels near Essendon, Hatfield and St. Albans, although it does not appear that the list of species met with has ever been worked out.

From the Hitchin lake-bed (see chapter on Geology) the following mammals have been recorded by Mr. C. Reid,⁴ viz., brown bear (*Ursus arctus*),⁵ Pleistocene horse (*Equus caballus fossilis*), woolly rhinoceros (*Rhinoceros antiquitatis*),⁵ Pleistocene hippopotamus (*Hippopotamus amphibius major*), red deer (*Cervus elaphus*) and mammoth (*Elephas primigenius*). A few other existing species were subsequently added⁶ to this list, which likewise includes several living kinds of fish, such as the perch, pike, roach and tench.

It may be added that the coprolite-pits in the Cambridge Greensand at Ashwell have doubtless yielded some of the vertebrate remains so common in those deposits in the adjacent counties, but it does not appear that any record of such has ever been compiled.

¹ *Trans. Watford Nat. Hist. Soc.*, vol. i. p. 170 (1877).

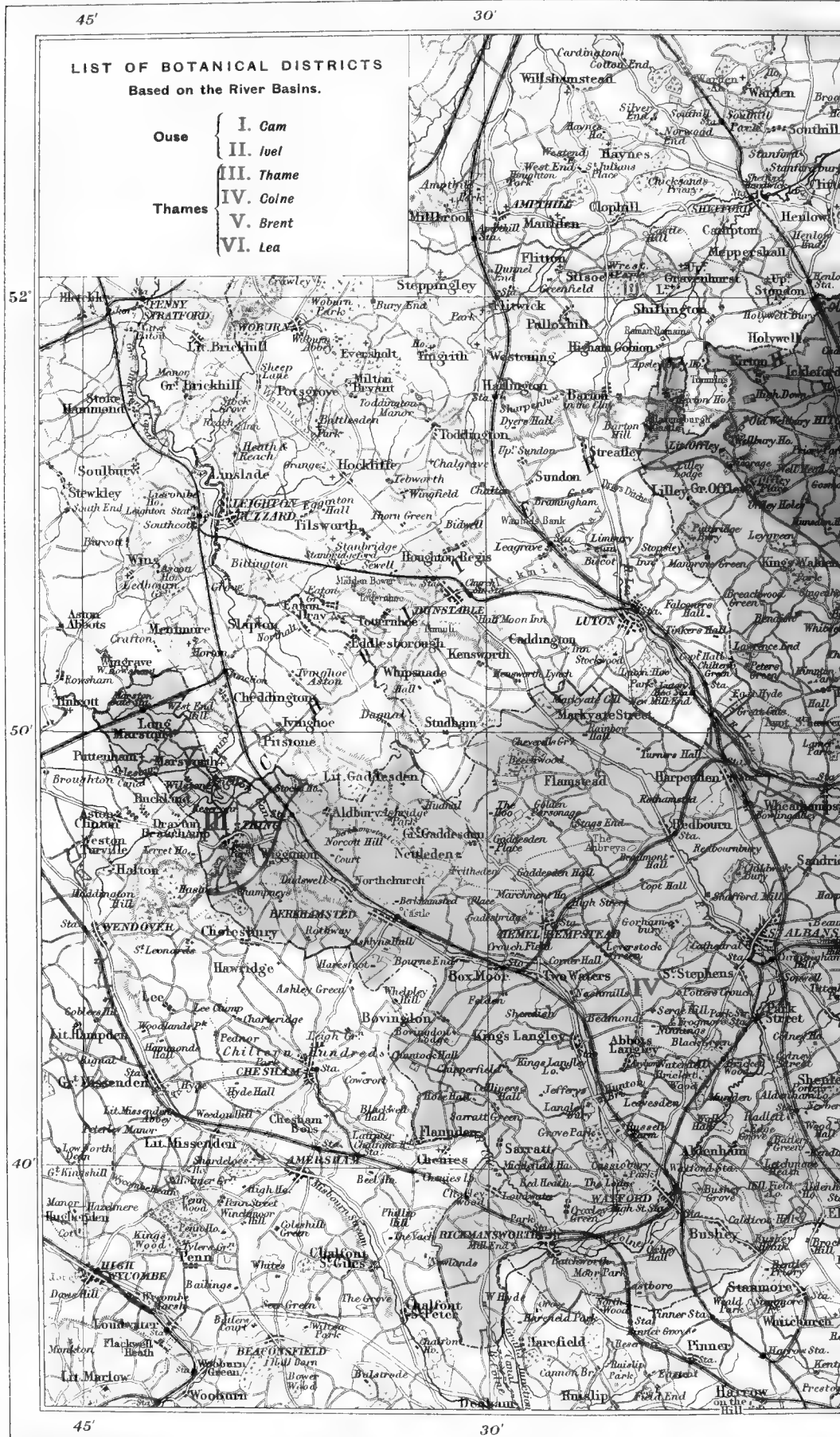
² *Geologist*, vol. i. p. 241.

³ *Trans. Herts Nat. Hist. Soc.*, vol. i. p. 106 (1881).

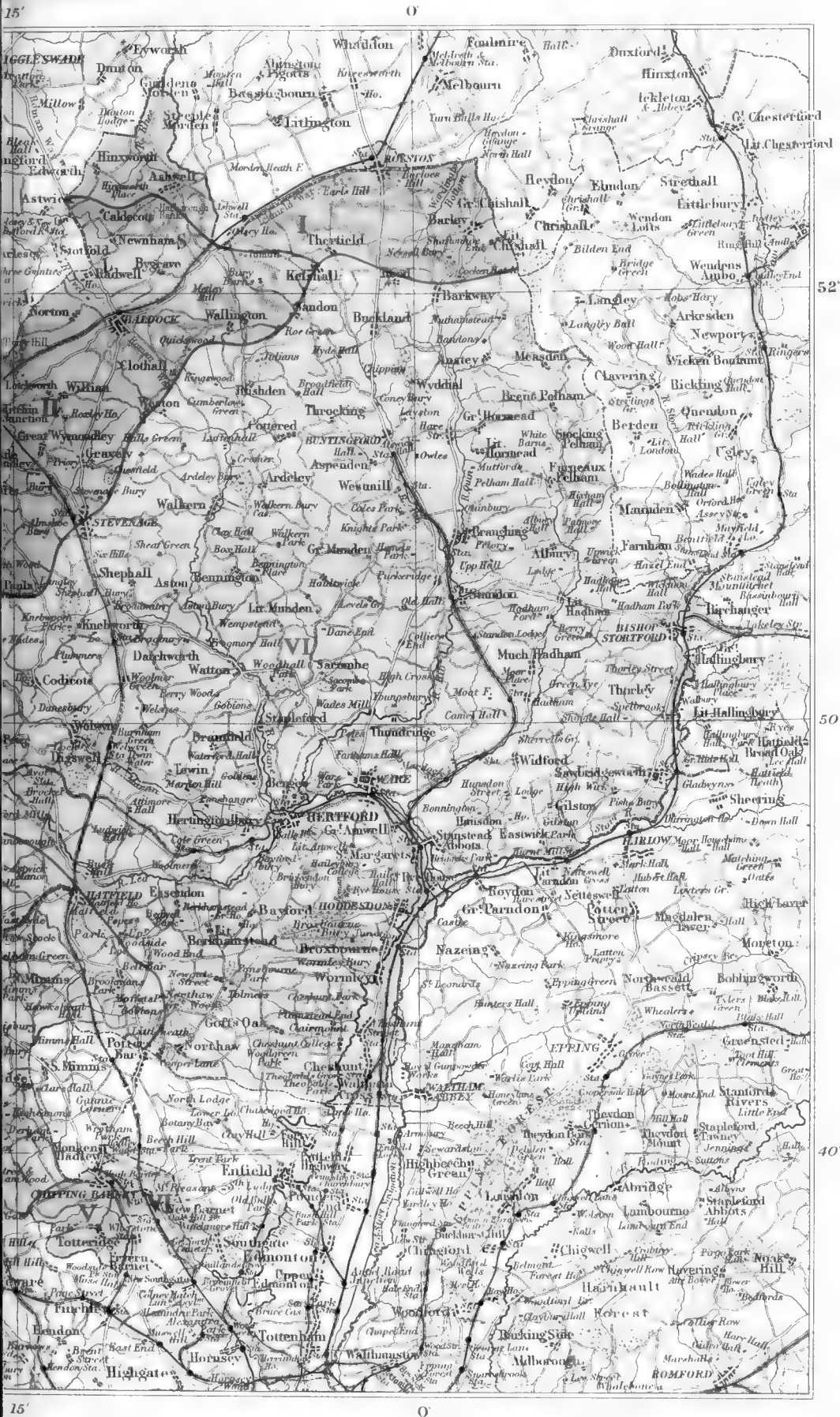
⁴ *Proc. Royal Society*, vol. lxi. p. 44 (1897).

⁵ In these cases Mr. Reid did not determine the species, which are named on account of the associated forms.

⁶ See Reid, *Trans. Herts Nat. Hist. Soc.*, vol. x. p. 14 (1898).



DISTRICTS.



BOTANY

THE botany of Hertfordshire has been thoroughly investigated with the exception of a few groups of cryptogamic plants, our knowledge of the lichens and of some of the microscopic fungi being the least extensive.

Two floras of the county have been published. The first, the *Flora Hertfordiensis* of Webb and Coleman, which appeared in 1849, with supplements in 1851 and 1859, is noteworthy as being the first flora in which a county was divided into districts based upon the natural divisions of river-basins, a method now almost universally adopted. It originated in a list of local plants drawn up by the Rev. W. H. Coleman when residing at Hertford in 1838, and most of the records are his, the Rev. R. H. Webb, rector of Essendon, being responsible for the arrangement and production of the work. On the death of Mr. Webb in 1879, the botanical correspondence, manuscripts, and herbaria of Webb and Coleman, and Mr. Webb's botanical library, were presented by Mrs. Webb to the Hertfordshire Natural History Society.

In 1874 Alfred Reginald Pryor commenced the preparation of a new flora of Hertfordshire, working assiduously at it in the field and in the study until his death in 1881, except when interrupted, as he frequently was, by illness. He bequeathed to the Hertfordshire Natural History Society his botanical library, manuscripts, and the sum of £100. The result was that the society undertook the publication of Mr. Pryor's unfinished flora, securing the services of Mr. B. Daydon Jackson, botanical secretary of the Linnean Society, as editor. This work¹ forms the basis of the present article. The classification and nomenclature, which are in accordance with Nyman's *Conspectus Floræ Europææ* (1878-85), have here been altered in order to conform as far as possible with Hooker's *Student's Flora of the British Islands* (3rd ed. 1884). This has proved to be a tedious operation, for Mr. Pryor worked with Babington's *Manual*, and with Nyman's *Conspectus* as the successive parts of that work appeared, and his views on nomenclature differed as widely as possible from those of Sir Joseph Hooker. The forms which he considered to be distinct species are here as a rule treated as such, but in the flowering plants Hooker's names are in all cases adopted, Pryor's, when better known or more generally used, being added within brackets.

¹ *A Flora of Hertfordshire*, by the late Alfred Reginald Pryor, edited for the Hertfordshire Natural History Society by Benjamin Daydon Jackson, with an Introduction on the Geology, Climate, Botanical History, etc., of the County, by John Hopkinson and the Editor, pp. lviii. 588 (London and Hertford, 1887).

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PHANEROGAMIA

The most interesting questions to determine with regard to the flowering plants of our county are how and when they were introduced, and what changes have taken place, or are doing so, in the character of the flora. It is essentially of a southern type, possessing but few northern species, and these are 'mostly rarities and numerically quite insufficient to modify the aspect of vegetation.'¹ To show what is meant by this it is necessary to state that the flora of Britain is a derived one, having originally been introduced from the continent of Europe somewhere about the Glacial period, with many subsequent accessions. Most of our commoner species have come from central Europe, whence they have spread over the whole of the British Isles, some northern species having a Scandinavian origin and some southern species having migrated from France and Spain. It is these which greatly predominate over the northern species in Hertfordshire.

The introduction of some of our existing species may date from before the Glacial period, part of our small arctic flora may have been introduced from the Scandinavian peninsula during this period, but by far the greater number of our widely diffused plants appear to have followed the retreat of the ice towards the close of the Glacial period, migrating into this country from the great Germanic plain. Although at that time the present main features of the surface of the county had been impressed upon it, sub-aërial denudation has been actively going on for the countless ages during which man has been upon the scene, and a vast amount of material has been removed. But this erosion has been effected by our existing rivers flowing in the same general direction as they do now, though at higher and higher levels as we trace them back in time. The flora of the county would not necessarily be thereby affected, but it has doubtless been modified to some extent by the clearing of forests and the draining of land.

Hertfordshire was undoubtedly much more densely wooded in past times, even within the historic period, than it is now ; the sources of our rivers were much higher ; streams ran down many valleys which are now dry ; and early man had to seek the higher ground away from the morasses which have left evidence of their former existence in beds of peat, or perhaps as elsewhere to seek safety from the wild beasts which prowled over the country by erecting his dwellings over lakes which have long ceased to exist.

That the flora of Hertfordshire between the close of the Glacial period and the advent of man was not widely different from what it is at the present day may be gathered from the following list of flowering plants determined by Mr. Clement Reid from the ancient lake-bed at Hitchin :² *Ranunculus aquatilis* (aggregate), *R. sceleratus*, *R. repens*, *Montia*

¹ *Flora of Hertfordshire*, p. 558.

² 'The Palæolithic Deposits at Hitchin,' *Trans. Herts Nat. Hist. Soc.* vol. x. pp. 18, 19 (1898).

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fontana, *Prunus spinosa*, *Poterium officinale*, *Pyrus torminalis* (?), *Hippuris vulgaris*, *Myriophyllum*, *Cornus sanguinea*, *Sambucus nigra*, *Eupatorium cannabinum*, *Fraxinus excelsior*, *Menyanthes trifoliata*, *Lycopus europæus*, *Ajuga reptans*, *Alnus glutinosa*, *Quercus robur*, *Ceratophyllum demersum*, *Sparganium*, *Potamogeton crispus* (and two other species of the genus), *Naias marina*, *Scirpus lacustris* (and one other species), *Carex*. Several species of *Chara* also occur.

Mr. Reid remarks: 'Such trees as the oak, ash, sloe, cornel, elder, and alder point unmistakably to a temperate climate, and the fauna and flora as a whole suggest climatic conditions not differing greatly from those we now enjoy. . . . The occurrence of *Naias marina*, now only found in Britain in two of the Norfolk Broads, is singular, though the plant was evidently more common in former times than it is at the present day.' This is the only plant on the list which is not now found in the county, and with this exception the whole of the plants are common or fairly common with us; more than half the number are of the generally diffused or British type, two (*Pyrus torminalis* and *Naias marina*) are exclusively English, one (*Cornus sanguinea*) is nearly so, and the rest are mainly British but more frequent in England than in the rest of the British Isles. By 'exclusively English' is meant confined to England in Britain, for all are continental, and all but *Naias marina*, which is a French and south German plant only, are widely diffused over the continent.

There is one point of great interest in this assemblage of plants, corroborating other evidence of the change which has taken place in our climate. All the herbaceous species are hygrophilous or moisture-loving, or actually water-plants, while one at least of the trees, the alder (*Alnus glutinosa*), grows only in wet places (on river-banks or in marshes). Here we have an indication of very different conditions from those which now prevail in the neighbourhood of Hitchin; the lake, the swamp, and the moist woods of this bygone period having given place to the dry gravelly hills and open chalk downs which are so characteristic of the north of Hertfordshire.

While climate has by far the greatest influence upon the distribution of plants, that exercised by geological formations is next in importance, and it should not be overlooked that geological formations have an influence upon climate. On a damp soil, especially in a well-wooded district, more rain will fall than on a dry soil, which will naturally tend to be a barren one. When the Reading Beds and London Clay extended over the whole of Hertfordshire and perhaps the greater part of the county was forest or swamp, the rainfall would be heavier and the temperature would probably be lower than at a later time, when the greater part of the clays and sands of these formations had been carried away, exposing the chalk beneath them, and when beds of permeable gravel were deposited upon both clay and chalk. The subsoil, originally eugeogenous, that is abrading easily and yielding much detritus, would give place to a subsoil of a dysgeogenous nature, that is disintegrating

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with difficulty and yielding but a small detritus. The result would be that hygrophiles or moisture-loving plants would be supplanted in the struggle for existence by xerophiles or heat-loving plants which thrive with a smaller amount of moisture. That is the principal change which has taken place in our flora since the epoch of the Hitchin lake-bed which immediately preceded the arrival of man in that district, and this change is still going on, every bit of land which is drained and brought under cultivation, and every drop of water abstracted from our underground Chalk reservoir in excess of that which percolates into it, hastening it on.

We have now scarcely any purely eugeogenous soils. Of the eighteen botanical provinces into which Hewett Cottrell Watson, in his *Cybele Britannica*, divided Britain, Hertfordshire is in two, the Thames and the Ouse, and each of these provinces comprises two geognostic types, dysgeogenous and subeugeogenous. Much the greater part of the county is in province 3, Thames; only a small portion in the north being in province 4, Ouse. In the Thames province it is only a small portion of the county, the London Clay area in the south, which is subeugeogenous; and in the Ouse province the very small area of the Gault Clay in the extreme west which is subeugeogenous may be disregarded for any practical purpose. Very much the greater portion of the county, in both the Thames and the Ouse provinces, therefore partakes of the dysgeogenous type of each of those provinces.

A list of 89 'dysgeogenous species' (xerophiles) of British flowering plants and of 138 'eugeogenous species' (hygrophiles) has been given by John Gilbert Baker in a paper read before the British Association in 1855.¹ Of these we have in Hertfordshire 30 xerophiles, being about 33 per cent. of those enumerated by Mr. Baker, and only 10 hygrophiles, or about 7 per cent. of the species which he enumerates. But this is not all: our 30 xerophiles are comparatively common—their relative frequency in our six botanical districts may be expressed by the number 104; on the other hand our 10 hygrophiles are comparatively rare—their relative frequency in our botanical districts being represented by the number 17. What is meant by this will be seen from the following tables, which give the occurrence of each species in each of the six botanical districts to be described presently. These lists might easily be extended, but it is thought better only to include those species which are enumerated by Mr. Baker.

In these and all other tables of flowering plants the sequence of species is the same as in Sir J. D. Hooker's *Student's Flora*, and the names adopted by him are used. In some cases the names used in Pryor's *Flora* are added as synonyms.

¹ 'The Flowering Plants and Ferns of Great Britain: an attempt to classify them according to their geognostic relations' (1855). This paper, which was printed as a separate pamphlet, is mainly based upon J. Thurmann's *Essai de phytostatique* . . . Jura . . . (Berne, 1849).

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DYSGEOGENOUS SPECIES (*Xerophiles*)

| | Cam | Ivel | Thame | Colne | Brent | Lea | No. of districts |
|--|-----|------|-------|-------|-------|-----|------------------|
| <i>Clematis vitalba</i> , L. | - | - | - | - | - | - | 6 |
| <i>Anemone pulsatilla</i> , L. | - | - | - | - | - | - | 3 |
| <i>Helleborus foetidus</i> , L. | - | - | - | - | - | - | 5 |
| — <i>viridis</i> , L. | - | - | - | - | - | - | 3 |
| <i>Aquilegia vulgaris</i> , L. | - | - | - | - | - | - | 4 |
| <i>Silene nutans</i> , L. | - | - | - | - | - | - | 1 |
| <i>Astragalus glycyphyllos</i> , L. | - | - | - | - | - | - | 2 |
| <i>Hippocrepis comosa</i> , L. | - | - | - | - | - | - | 4 |
| <i>Onobrychis sativa</i> , Lamk. | - | - | - | - | - | - | 4 |
| <i>Spiræa filipendula</i> , L. | - | - | - | - | - | - | 4 |
| <i>Carum bulbocastanum</i> , Koch | - | - | - | - | - | - | 4 |
| <i>Asperula cynanchica</i> , L. | - | - | - | - | - | - | 5 |
| <i>Scabiosa columbaria</i> , L. | - | - | - | - | - | - | 5 |
| <i>Cnicus</i> (<i>Cirsium</i>) <i>eriphorus</i> , Hoffm. | - | - | - | - | - | - | 3 |
| — <i>acaulis</i> , Hoffm. | - | - | - | - | - | - | 5 |
| <i>Campanula glomerata</i> , L. | - | - | - | - | - | - | 5 |
| <i>Atropa belladonna</i> , L. | - | - | - | - | - | - | 2 |
| <i>Calamintha nepeta</i> , Savi (sub-sp. Hooker) | - | - | - | - | - | - | 3 |
| <i>Thesium linophyllum</i> , L. (humifusum, DC.) | - | - | - | - | - | - | 2 |
| <i>Spiranthes autumnalis</i> , Rich. | - | - | - | - | - | - | 4 |
| <i>Cephalanthera ensifolia</i> , Rich. | - | - | - | - | - | - | 1 |
| <i>Orchis militaris</i> , L. | - | - | - | - | - | - | 2 |
| — <i>pyramidalis</i> , L. | - | - | - | - | - | - | 5 |
| <i>Aceras anthropophora</i> , R. Br. | - | - | - | - | - | - | 1 |
| <i>Ophrys apifera</i> , Huds. | - | - | - | - | - | - | 5 |
| — <i>muscifera</i> , Huds. | - | - | - | - | - | - | 5 |
| <i>Herminium monorchis</i> , R. Br. | - | - | - | - | - | - | 3 |
| <i>Polygonatum multiflorum</i> , All. | - | - | - | - | - | - | 3 |
| <i>Convallaria majalis</i> , L. | - | - | - | - | - | - | 3 |
| <i>Brachypodium pinnatum</i> , Beauv. | - | - | - | - | - | - | 2 |
| | 17 | 23 | 13 | 26 | 2 | 23 | 104 |

EUGEOGENOUS SPECIES (*Hygrophiles*)

| | Cam | Ivel | Thame | Colne | Brent | Lea | No. of districts |
|---|-----|------|-------|-------|-------|-----|------------------|
| <i>Ranunculus circinatus</i> , Sibth. | - | - | - | - | - | - | 4 |
| <i>Silene conica</i> , L. | - | - | - | - | - | - | 1 |
| <i>Medicago falcata</i> , L. | - | - | - | - | - | - | 1 |
| <i>Galium anglicum</i> , Huds. | - | - | - | - | - | - | 1 |
| <i>Arnoseris pusilla</i> , Gært. | - | - | - | - | - | - | 1 |
| <i>Chenopodium glaucum</i> , L. | - | - | - | - | - | - | 1 |
| <i>Ceratophyllum demersum</i> , L. | - | - | - | - | - | - | 4 |
| <i>Stratiotes aloides</i> , L. | - | - | - | - | - | - | 2 |
| <i>Potamogeton acutifolius</i> , Link | - | - | - | - | - | - | 1 |
| <i>Carex paradoxa</i> , Willd. | - | - | - | - | - | - | 1 |
| | 0 | 4 | 2 | 5 | 1 | 5 | 17 |

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Although the best division of a county for botanical purposes is into river-basins, there are some characteristics of our flora which are more prominently brought out by a lithological division. The Upper Chalk occupies very much the greater part of Hertfordshire, with much boulder-clay upon it in the east, and with clay-with-flints and gravel, chiefly Glacial, in the west. These divisions coincide so nearly with the Lea river-basin on the east and the Colne river-basin on the west that they need not here be further alluded to. The Upper Chalk ends off and the Middle Chalk crops out along the Chiltern Hills on the north-west, and this portion of the county, being chiefly chalk downs, has a peculiar flora, essentially xerophilous. The pasque-flower (*Anemone pulsatilla*) occurs in Hertfordshire only on the Middle Chalk, growing abundantly, though very locally, in some of the chalk combes, chiefly on slopes facing south-west. Thecombe south of Barton, just outside our boundary, is known as the 'Pulsatilla Banks,' and this name might well be given to the westerly slopes of Aldbury Owers near Tring. The Middle Chalk is also with us peculiarly the home of the orchids. The dwarf orchis (*Orchis ustulata*), the man orchis (*Aceras anthropophora*), and the butterfly orchis (*Habenaria bifolia*) seem to be restricted to it, but this is probably due merely to the bareness of this division of the Chalk, some orchids only thriving on a calcareous soil. *Carum bulbocastanum* is almost entirely restricted to the chalk hills on the north; and *Fumaria parviflora*, *Astragalus hypoglottis*, *Senecio campestris*, *Thesium linophyllum*, and *Brachypodium pinnatum* are absolutely restricted to them, with the exception of one record of the last-named species which is open to question.

In the south-east, overlying the Chalk, are Eocene beds, the London Clay ending off and the Reading Beds cropping out from underneath it in a range of hills which form the north-western edge of the London Tertiary Basin. This is our subeugeogenous district, and it presents a marked contrast to the dysgeogenous Cretaceous area. As stated in the article on the geology of Hertfordshire, 'its soils, its agriculture, and its flora are of an essentially Middlesex type. In the Colne and Brent districts it forms grass lands devoted to hay-farming and grazing, interspersed with woods chiefly of oak, ash, elm, and fir trees; in the Lea district, on the south, owing to the rich alluvial soil, market gardens and nurseries predominate; while on the east, owing to the covering of boulder-clay, the land is chiefly under arable culture, partaking of the character of the corn-growing districts of the adjoining county of Essex.' The hygrophiles *Medicago falcata*, *Arnoseria pusilla*, *Chenopodium glaucum*, *Potamogeton acutifolius*, and *Carex paradoxa* are restricted to this Eocene area.

The counties by which Hertfordshire is surrounded are Cambridgeshire, Bedfordshire, Buckinghamshire, Middlesex, and Essex. There are 110 species of flowering plants in these counties which are not recorded for Herts. Three of these, *Ranunculus fluitans*, *Salix rubra*, and *Potamogeton zosterifolius*, occur in all the adjoining counties. The following Herts species are not recorded from any one of them: *Ranunculus floribundus*, *Silene conica*, *S. nutans*, *Rosa silvestris*, *Pyrola rotundifolia*, *Cuscuta epilinum*,

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Verbascum lychnitis, *Orobanche cærulea*, *Cephalanthera ensifolia*, *Gagea lutea*, *Carex bænninghausiana* (hybrid), *C. xanthocampa* (? hybrid) and *Pbleum præcox*. Eight *Rubi* are not included in this enumeration, not being considered distinct species by Sir Joseph Hooker. They are *Rubus affinis*, *R. thyrsoides*, *R. fusco-ater*, *R. Sprengelii*, *R. glandulosus*, *R. birtus*, *R. Bellardi*, and *R. pseudo-idæus*.

Of the 893 species of indigenous Hertfordshire flowering plants there are about 110 not recorded as native plants in Cambridgeshire, about 120 are wanting in Bedfordshire, 170 in Buckinghamshire, 140 in Middlesex, and 100 in Essex. On the other hand, Cambridgeshire has 55 indigenous species which are wanting in Herts, Beds has 30, Bucks 22, Middlesex 34, and Essex 56 (exclusive of its coast plants). Doubtful records are in all cases excluded. These figures might be very much modified if the botany of each of the counties were equally worked up. Taking the number of species in any adjoining county which are absent from Hertfordshire as the best index of the degree of relationship, it would appear that the flora of Bucks is the most nearly allied to that of Herts, and that those of Cambridge and Essex are the most divergent from that of Herts. This is just what might be expected from the physical features and geological structure of these counties. The floras of Cambridge and Essex have also a more northern or north-eastern facies than that of Hertfordshire, which, as previously stated, is of a decidedly southern type. The large number of Hertfordshire species which have not been recorded from Buckinghamshire is probably due to the flora of that county not having been so thoroughly investigated as ours has been.

The following table gives a list of the Natural Orders of Phanerogamia which are represented in the county, with the number of genera and species in each Order, and also the number of species which have been reported but are excluded either because they cannot be considered to be indigenous or because the evidence of their occurrence is open to doubt. The general classification is that of Sir J. D. Hooker, but the numbers indicate the genera and species enumerated in Pryor's *Flora of Hertfordshire*.

The number of species given in the table does not exactly tally with the number on page 557 of that work. The total number of flowering plants and ferns is there stated to be 1,116, of which 26 are ferns, leaving 1,090 flowering plants, of which 898 are considered to be indigenous. Two species have since been added—the oxlip (*Primula elatior*), a native plant, and the alkanet (*Anchusa officinalis*), an alien.¹ The soapwort (*Saponaria officinalis*) being a denizen, and the water-thyme (*Anacharis alsinastrum*) being an introduced species, have been relegated to the excluded species, and so also have *Wallenbergia bederacea*, *Pyrola media*, *Euphorbia stricta*, and *Carex canescens* as having been included in our flora on insufficient evidence. The 898 numbered species in Pryor's *Flora* are thus reduced to 893, and the 192 excluded species are increased to 199, giving a total of 1,092.

¹ See *Trans. Herts Nat. Hist. Soc.* vol. x. p. ix. (1901).

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SUMMARY OF ORDERS, GENERA, AND SPECIES

| | Number of Genera | Number of Species | Ex- cluded Species | | Number of Genera | Number of Species | Ex- cluded Species |
|------------------------------------|------------------------|-------------------------|--------------------------|-----------------------------------|------------------------|-------------------------|--------------------------|
| CLASS I | | | | 42. Oleaceæ | 2 | 2 | — |
| DICOTYLEDONES OR | | | | 43. Apocynaceæ . . . | 1 | 1 | 1 |
| EXOGENÆ | | | | 44. Gentianeæ | 4 | 7 | 1 |
| Div. I. <i>Thalamifloræ</i> | | | | <i>Polemoniaceæ</i> . . . | — | — | 1 |
| 1. Ranunculaceæ . . . | 11 | 29 | 6 | 45. Boraginæ | 6 | 15 | 8 |
| 2. Berberideæ | 1 | 1 | — | 46. Convolvulaceæ . . | 3 | 6 | 1 |
| 3. Nymphæaceæ | 2 | 2 | — | 47. Solanaceæ | 3 | 4 | 2 |
| 4. Papaveraceæ | 2 | 6 | 1 | 48. Plantagineæ | 2 | 5 | — |
| 5. Fumariaceæ | 1 | 5 | 2 | 49. Scrophularinæ . . . | 13 | 38 | 4 |
| 6. Cruciferæ | 19 | 34 | 21 | 50. Orobanchaceæ . . . | 2 | 4 | — |
| 7. Resedaceæ | 1 | 2 | 1 | 51. Lentibularinæ . . . | 2 | 2 | — |
| 8. Cistineæ | 1 | 1 | — | 52. Verbenaceæ | 1 | 1 | — |
| 9. Violaceæ | 1 | 6 | — | 53. Labiataæ | 20 | 38 | 5 |
| 10. Polygalæ | 1 | 3 | — | Div. IV. <i>Incompletæ</i> | | | |
| 11. Caryophyllæ | 15 | 33 | 9 | <i>Amaranthaceæ</i> . . . | — | — | 1 |
| 12. Portulacææ | 1 | 1 | 2 | 54. Illecebraceæ | 1 | 1 | — |
| 13. Hypericineæ | 2 | 7 | 3 | 55. Chenopodiaceæ . . . | 2 | 13 | 2 |
| 14. Malvaceæ | 1 | 3 | 2 | 56. Polygonaceæ | 2 | 20 | 3 |
| <i>Tiliaceæ</i> | — | — | 2 | <i>Aristolochiaceæ</i> . . . | — | — | 2 |
| 15. Lineæ | 2 | 2 | 1 | 57. Thymelæaceæ | 1 | 1 | 1 |
| 16. Geraniaceæ | 3 | 11 | 8 | 58. Loranthaceæ | 1 | 1 | — |
| 17. Ilicineæ | 1 | 1 | — | 59. Santalaceæ | 1 | 1 | — |
| Div. II. <i>Calycifloræ</i> | | | | 60. Euphorbiaceæ | 2 | 7 | 3 |
| 18. Celastrineæ | 1 | 1 | — | 61. Urticaceæ | 4 | 6 | 1 |
| 19. Rhamneæ | 1 | 2 | — | 62. Cupuliferæ | 6 | 8 | 1 |
| 20. Sapindaceæ | 1 | 1 | 1 | 63. Salicineæ | 2 | 14 | 4 |
| 21. Leguminosæ | 18 | 47 | 12 | 64. Ceratophyllæ | 1 | 1 | — |
| 22. Rosaceæ | 15 | 76 | 8 | Div. V. <i>Gymnospermæ</i> | | | |
| 23. Saxifrageæ | 3 | 4 | 3 | 65. Coniferæ | 1 | 1 | — |
| 24. Crassulaceæ | 1 | 3 | 5 | CLASS II | | | |
| 25. Droseraceæ | 1 | 1 | — | MONOCOTYLEDONES OR | | | |
| 26. Halorageæ | 3 | 8 | — | ENDOGENÆ | | | |
| 27. Lythraceæ | 2 | 3 | — | 66. Hydrocharideæ . . . | 2 | 2 | 1 |
| 28. Onagrarieæ | 3 | 9 | 1 | 67. Orchideæ | 14 | 24 | 2 |
| 29. Cucurbitaceæ | 1 | 1 | — | 68. Irideæ | 1 | 2 | 1 |
| 30. Umbelliferæ | 28 | 36 | 8 | 69. Amaryllideæ | 1 | 1 | 4 |
| 31. Araliaceæ | 1 | 1 | — | 70. Dioscoreæ | 1 | 1 | — |
| 32. Cornaceæ | 1 | 1 | — | 71. Liliaceæ | 8 | 10 | 5 |
| Div. III. <i>Monopetalæ</i> | | | | 72. Junceæ | 2 | 15 | — |
| 33. Caprifoliaceæ | 4 | 6 | 3 | 73. Typhaceæ | 2 | 5 | — |
| 34. Rubiaceæ | 3 | 15 | 1 | 74. Aroideæ | 2 | 2 | — |
| 35. Valerianeæ | 2 | 6 | 2 | 75. Lemnaceæ | 2 | 4 | — |
| 36. Dipsaceæ | 4 | 5 | 1 | 76. Alismaceæ | 4 | 6 | — |
| 37. Compositæ | 44 | 83 | 20 | 77. Naiadaceæ | 3 | 17 | — |
| 38. Campanulaceæ | 3 | 7 | 3 | 78. Cyperaceæ | 8 | 49 | 1 |
| 39. Ericaceæ | 4 | 6 | 1 | 79. Gramineæ | 35 | 76 | 16 |
| 40. Monotropææ | 1 | 1 | — | Total . | | | |
| 41. Primulaceæ | 6 | 12 | 1 | | 384 | 893 | 199 |

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NOTES ON THE BOTANICAL DISTRICTS, WITH LISTS OF THE RARER PLANTS OF EACH DISTRICT

In the *Flora Hertfordiensis* of Webb and Coleman (1849) Hertfordshire was divided into botanical districts founded on the river-basins. The three main districts were the Lea, the Colne, and the Ouse, each of these being divided into sub-districts representing the tributaries of these rivers, and the number of such sub-districts were twelve.

In a paper read before the Watford (now Hertfordshire) Natural History Society in 1875¹ the late Alfred Reginald Pryor recognized the primary separation of the county into the catchment-basin of the Ouse on the north and that of the Thames on the south, 'districts which,' he said, 'in the floras of the future, will probably be entirely dissociated from each other and united respectively to those portions of the same river-system with which they are naturally connected, but which are now scattered among the southern and eastern shires.' He then divided the Ouse district into the Ivel and Cam; and the Thames into the Thame, the Colne with five sub-districts, the Brent, and the Lea with six sub-districts, making sixteen districts in all. He afterwards found this subdivision to be impracticable from the impossibility of assigning many of the old records to these districts, and he therefore abandoned the sub-districts of the Colne and Lea and finally left the scheme thus—

- | | | | |
|----------------|---|---|--------------|
| I. The Ouse | . | { | 1. The Cam |
| | | | 2. The Ivel |
| II. The Thames | | { | 3. The Thame |
| | | | 4. The Colne |
| | | | 5. The Brent |
| | | | 6. The Lea |

This is the division of the county which was adopted in his *Flora of Hertfordshire* published in 1887, a few years after his death. As this work is the basis of the present article on the botany of Hertfordshire, the above division is necessarily followed.²

DISTRICT I.—THE CAM

This is the most northern district. It is bounded on the east by Essex, on the north by Cambridgeshire which divides it into two, on the west by Bedfordshire, and on the south by the Ivel and Lea districts.

A stream called the Wadrington Brook, which while in Herts is little more than a ditch, flows through the eastern division of the district, and through the western division flows the Rhee, which rises from copious springs in the Totternhoe Stone at Ashwell, is joined at the extreme north of the county by the Ruddry Brook, and joins the Cam a little south of Cambridge.

The district is almost entirely on the Chalk, a small portion on the north-east being on the Gault. It is very bare of trees and is marked by the absence of hygrophiles (see p. 39). In the eastern division are the Royston Downs, rising to about 500 feet above sea-level.

The few species which are restricted to this district are very rare. *Thalictrum jacquinianum* and *Antennaria dioica* occur only on Royston and Therfield Heaths in the eastern division; *Alisma ranunculoides* and *Potamogeton coloratus* only on Ashwell Common in the western division; and of *Poterium officinale* the only record is that of a plant in Coleman's herbarium gathered in the neighbourhood of Ashwell in 1840.

The rarer plants of the district are—

RANUNCULACEÆ

Thalictrum Jacquinianum, Koch
Anemone pulsatilla, L.
Helleborus foetidus, L.

PAPAVERACEÆ

Papaver hybridum, L.

FUMARIACEÆ

Fumaria parviflora, Lamk.
 — *Vaillantii*, Loisel.

CRUCIFERÆ

Iberis amara, L.

¹ 'On the Botanical Work of the Past Season,' *Trans. Watford Nat. Hist. Soc.* vol. i. pp. 65-77.

² The names of the plants which only occur in one district are printed in italics.

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CARYOPHYLLÆ

Silene noctiflora, *L.*
Arenaria (Alsine) *tenuifolia*, *L.*

LEGUMINOSÆ

Trifolium ochroleucum, *L.*
Astragalus hypoglottis, *L.*
Hippocrepis comosa, *L.*

ROSACEÆ

Poterium officinale, *Hook. f.*

UMBELLIFERÆ

Bupleurum rotundifolium, *L.*
Apium graveolens, *L.*
Carum (*Bunium*) *bulbocastanum*, *Koch*
Sesseli libanotis, *Koch* (*Libanotis montana*, *All.*)
Oenanthe Lachenalii, *Gmel.*
Caucalis daucoides, *L.*

VALERIANÆ

Valeriana officinalis, *L.*

COMPOSITÆ

Antennaria dioica, *Br.*
Senecio (*Cineraria*) *campestris*, *DC.*
Arctium majus, *Schk.*
Cnicus eriophorum, *Hoffm.*

SCROPHULARINÆ

Linaria spuria, *Miller*
Melampyrum cristatum, *L.*

OROBANCHÆ

Orobanche major, *L.*

LABIATÆ

Ajuga chamæpitys, *Schreb.*

LORANTHACÆ

Thesium linophyllum, *L.* (*humifusum*, *DC.*)

ORCHIDÆ

Orchis ustulata, *L.*

ALISMACEÆ

Alisma ranunculoides, *L.*

NAIADACEÆ

Potamogeton coloratus, *Hornem*

GRAMINÆ

Bromus racemosus, *L.*
Brachypodium pinnatum, *Beauv.*

DISTRICT II.—THE IVEL

This district is south-west of that of the Cam, and is bounded on the north-west by Bedfordshire and on the south by the Lea district.

The Ivel rises near Baldock, leaves our county for Bedfordshire after a run of a mile and a half, and is then soon joined by a longer stream rising near Wallington. Its next tributary is the Hiz, which rises at Wellhead, a mile south of Hitchin (Hiz-chine), through which it flows. A mile below Hitchin the Hiz receives the Purwell or Pirrall, a stream having a much longer run than itself, and rising between Weston and Graveley; and in another mile, at Ickleford, it receives a small stream called the Oughton. Half-way between Bedford and St. Neots the Ivel joins the Ouse, which pursues its course for some forty miles before it receives the Cam near Ely.

The Chalk downs of the eastern division of the Cam district are continued in a south-westerly direction through the Ivel district, of which they form the north-western half. Highest on the south-east, they slope downwards to the Gault plain on the north-west. Here there are numerous combes in the Lower Chalk which have been formed by water issuing from springs in the Totternhoe Stone. In most of them there is now no water and the soil is particularly dry owing to the sinking of the plane of saturation of the Chalk, this portion of the district consequently having an essentially xerophilous flora.

Although this is a much larger district than that of the Cam, and its botany has been more thoroughly investigated than that of any other, only half a dozen species are restricted to it. *Melampyrum arvense* occurs only in one spot south of Ashwell; *Smyrnum olusatrum* has been found in one or two places north of Baldock and near Pirton, and there is also a record of its occurrence at St. Albans in the Colne district, but its site has long been built over; and the other four species are confined to the neighbourhood of Hitchin. Of these *Silene conica* is the rarest. The only record of its occurrence is near High Down, Hitchin, in 1875.

The rarer plants of the district are—

RANUNCULACÆ

Anemone pulsatilla, *L.*
Ranunculus diversifolius, *H. Watts.*
Helleborus foetidus, *L.*
— *viridis*, *L.*

PAPAVERACÆ

Papaver hybridum, *L.*
— *Lecoqii*, *Lamotte*

FUMARIACÆ

Fumaria Boræi, *Ford.*
— *parviflora*, *Lamk.*
— *Vaillantii*, *Loisel.*

CRUCIFERÆ

Senebiera (*Coronopus*) *didyma*, *Persoon*
Iberis amara, *L.*

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POLYGALÆÆ
Polygala oxyptera, *Reichb.*

CARYOPHYLLÆÆ
Silene conica, L.
— *noctiflora*, L.
Arenaria (Alsine) *tenuifolia*, L.

LEGUMINOSÆÆ
Trifolium ochroleucum, L.
Astragalus hypoglottis, L.
Hippocrepis comosa, L.
Vicia (Ervum) *gracilis*, *Loisel.*
— *silvatica*, L.
Lathyrus aphaca, L.
— *silvestris*, L.

ROSACEÆÆ
Prunus cerasus, L.

CRASSULACEÆÆ
Sedum fabaria, *Koch*

ONAGRARIÆÆ
Epilobium roseum, *Schreb.*

UMBELLIFERÆÆ
Smyrniolum olusatrum, L.
Bupleurum rotundifolium, L.
Apium graveolens, L.
Carum segetum, *Benth.*
— (Bunium) *bulbocastanum*, *Koch*
Sesseli libanotis, *Koch*
Oenanthe Lachenalii, *Gmel.*
Caucalis daucoides, L.

RUBIACEÆÆ
Galium Witheringii, *Sm.*
— *erectum*, *Huds.*

VALERIANÆÆ
Valeriana officinalis, L.
Valerianella auricula, *DC.* (*rimosa*, *Bast.*)

COMPOSITÆÆ
Filago spathulata, *Presl*
Senecio (Cineraria) *campestris*, *DC.*
Centaurea calcitrapa, L.
Crepis biennis, L.
— *taraxacifolia*, *Thuill.*

MONOTROPEÆÆ
Hypopithys multiflora, *Scop.*

PRIMULACEÆÆ
Anagallis cærulea, *Schreb.*

CONVOLVULACEÆÆ
Cuscuta europæa, L.

SCROPHULARINÆÆ
Verbascum blattaria, L.
Antirrhinum orontium, L.
Linaria spuria, *Miller*
Melampyrum arvense, L.
— *cristatum*, L.

OROBANCHEÆÆ
Orobanche major, L.
— *minor*, *Sutt.*

LABIATÆÆ
Mentha pulegium, L.
Ajuga chamæpitys, *Schreb.*

CHENOPODIACEÆÆ
Chenopodium vulvaria, L.
— *ficifolium*, *Sm.*
— *hybridum*, L.

POLYGONACEÆÆ
Polygonum maculatum, *Dyer et Trimen*

SANTALACEÆÆ
Thesium linophyllum, L. (*humifusum*, *DC.*)

EUPHORBIACEÆÆ
Euphorbia platyphyllos, L.

ORCHIDEÆÆ
Cephalanthera pallens, *Rich.*
Orchis ustulata, L.
Herminium monorchis, *Br.*

IRIDEÆÆ
Iris fœtidissima, L.

CYPERACEÆÆ
Carex dioica, L.
— *stricta*, *Good.*
— *xanthocarpa*, *Degl.* (? hybrid)

GRAMINEÆÆ
Phleum phalaroides, *Koel.*
Bromus racemosus, L.
Brachypodium pinnatum, *Beauv.*
Hordeum silvaticum, *Huds.* (*Elymus europæus*, L.)

DISTRICT III.—THE THAME

The very small portion of the extreme west of the county which is in this district forms a tongue-like protrusion into Buckinghamshire, being bounded by that county on all sides but the east, where the Colne district forms the boundary.

The small tributary streams of the Thame, rising near Tring, are intercepted by the reservoirs which supply the Grand Junction Canal, all of which are in this district. The Thame soon leaves our county, and, flowing westward north of Aylesbury to below Dorchester in Oxfordshire, there unites with the Thames; or, as Chauncy says (*Hist. Antiq. Herts*), ‘then congratulates the Isis; but both emulating each other for the name, and neither yielding, they are complicated by that of Thamisis.’

The district lies high: a mile north of Tring is the summit-level of a system of canals which radiate to the north, west, south-west, and south-east. The Chalk terminates near the

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centre of the district, and beyond it on the north-west is the only considerable area of the Gault in Hertfordshire. This accounts for the presence of a few hygrophiles.

Two of the species confined to the district (*Typha angustifolia* and *Potamogeton Friesii*) are water-plants which occur only in the Tring Reservoirs or the canals which they supply. *Papulus sarsensis* grows by the Wilstone Reservoir, and *Astrus anthropophora* on terraces cut in the chalk near Tring.

The following are the rarer plants recorded from this district—

| | |
|--|---|
| <p style="text-align: center;">RANUNCULACEÆ</p> <p><i>Helleborus scridus</i>, L.</p> <p style="text-align: center;">PAPAYERACEÆ</p> <p><i>Papaver Leonæj</i>, <i>Leonæj</i></p> <p style="text-align: center;">FUMARIACEÆ</p> <p><i>Fumaria Vaillantii</i>, <i>Leonæj</i></p> <p style="text-align: center;">CRUCIFERÆ</p> <p><i>Erophila prostrata</i>, DC.</p> <p><i>Iberis amara</i>, L.</p> <p style="text-align: center;">ROSACEÆ</p> <p><i>Prunus cerasus</i>, L.</p> <p style="text-align: center;">VALERIANACEÆ</p> <p><i>Valeriana officinalis</i>, L.</p> <p style="text-align: center;">ERICACEÆ</p> <p><i>Pyrola minor</i>, Sm.</p> <p style="text-align: center;">MONOTROPEÆ</p> <p><i>Hypopichys multiflora</i>, Ssp.</p> <p style="text-align: center;">GENTIANACEÆ</p> <p><i>Gentiana germanica</i>, <i>Willd.</i></p> | <p style="text-align: center;">CONVOLVULACEÆ</p> <p><i>Cuscuta europæa</i>, L.</p> <p style="text-align: center;">SALICINÆ</p> <p><i>Papulus sarsensis</i>, Sm.</p> <p style="text-align: center;">ORCHIDACEÆ</p> <p><i>Cephalanthera pallens</i>, Rich.</p> <p><i>Orchis ustulata</i>, L.</p> <p>— <i>militaris</i>, L.</p> <p><i>Astrus anthropophora</i>, Br.</p> <p style="text-align: center;">LILIACEÆ</p> <p><i>Polygonatum multiflorum</i>, <i>ILL.</i></p> <p style="text-align: center;">TYPHACEÆ</p> <p><i>Typha angustifolia</i>, L.</p> <p style="text-align: center;">NALADACEÆ</p> <p><i>Potamogeton obtusifolius</i>, <i>Mert. et Koch</i></p> <p>— <i>Friesii</i>, <i>Rupr.</i></p> <p style="text-align: center;">CYPERACEÆ</p> <p><i>Carex gracilis</i>, <i>Curt.</i></p> <p style="text-align: center;">GRAMINÆÆ</p> <p><i>Bromus racemosus</i>, L.</p> <p><i>Hordeum silvaticum</i>, <i>Hook.</i> (<i>Elymus europæus</i>, L.)</p> |
|--|---|

DISTRICT IV.—THE COLNE

This is a large district, comprising almost the whole of the western portion of the county. The Lea district forms its north-western boundary, on the north it is bounded by a small detached portion of the same district¹ and by Bedfordshire and Buckinghamshire, on the west by the Thame district and Buckinghamshire, and on the south by Middlesex and the Brent district. Most of the district is on the Upper Chalk, a small area south-east of Shenley, Watford, and Rickmansworth being on the London Clay, and a narrow outcrop of the Reading Beds lying between.

The Colne in wet seasons rises about half-way between Elstree and Barnet, and flows in a northerly direction past South Mimms, where it leaves the London Clay for the Chalk in which its waters are lost in swallow-holes, there being several in its bed between Watrend and Potterells near North Mimms. From this point the river when it flows turns westward, and below Tickenhanger, near London Colney, its bed is seldom dry. Chauncy evidently considered its source to be here, for he says (*op. cit.*): 'The Colne, which springs forth near Tickenhanger, then passeth the road at Colney Street, and, running above two miles in length, meets the Verlume near Park Street, but though the Verlume is much the greater stream, yet the Colne usurps the glory of her own name, and floweth thence to Watford.' The Ver, formerly known as the Verlume or Mure, rises near Markvate Street, flows through Redbourn, where it receives a small tributary, and passes between the site of ancient Verulam and the city of St. Albans before it meets the Colne near Bricket Wood. A small stream sometimes flows (its bed is often dry) from Elstree Reservoir past Radlett into the Colne just above this point; and near Aldenham, a few miles below, the river is considerably augmented, except in very dry seasons, by the springs of Otterspool. After passing Watford the Colne receives the Gade above and the Chess at Rickmansworth. The Gade rises near Great Gaddesden, the position of its source varying in different years and seasons for a mile or more, and at Two Waters it receives the Balbourne, the source of which has receded about three miles within the last 150 or 200 years, and is now at Cowroast, half-way between Tring Station and Northchurch. Into the Balbourne occasionally flows the Bourne, already

¹ See note to Lea district (*op. cit.*) as to this.

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mentioned (p. 28). The Bulbourne below Berkhamsted, the Gade below Two Waters, and the Colne below Rickmansworth, are frequently incorporated with the Grand Junction Canal. Leaving our county near Harefield, the Colne, flowing southwards, passes Uxbridge, where it begins to divide into numerous irregularly anastomosing channels which have several outlets into the Thames at and above Staines.

To the presence in the valley of the Ver of an old city, more interesting in its associations than any other in the kingdom, is due the existence in Hertfordshire of *Diplataxis tenuifolia*, *Silene nutans*, and *Hieracium murorum*, for they grow nowhere in the county but on old walls in St. Albans. Colney Heath, near the head of the Colne, is of much botanical interest, chiefly owing to its marshes and swampy meadows. It is our only habitat for the very rare *Lytbrum byssopifolia*, and also for *Teesdalia nudicaulis*, while we have only one other locality, a different one in each case, for four of its plants—*Radiola linoides* (Northaw), *Centunculus minimus* (Moor Park), *Cuscuta epithymum* (No Man's Land, St. Albans), and *Potamogeton acutifolius* (London Colney).

The rarer plants of this district and those peculiar to it make a rather long list. They are—

RANUNCULACEÆ

Anemone pulsatilla, L.
Helleborus foetidus, L.
— *viridis*, L.

PAPAVERACEÆ

Papaver Lecoqii, Lamotte

FUMARIACEÆ

Fumaria Vaillantii, Loisel.

CRUCIFERÆ

Nasturtium amphibium, Br.
Dentaria bulbifera, L.
Diplotaxis tenuifolia, DC.
Erophila præcox, DC.
Lepidium ruderales, L.
Iberis amara, L.
Teesdalia nudicaulis, Br.

POLYGALÆ

Polygala oxyptera, Reicbb.

CARYOPHYLLÆ

Silene nutans, L.
Cerastium quaternellum, Fenzl.
Arenaria (Alsine) tenuifolia, L.

LINEÆ

Radiola linoides, Gmel.

GERANIACEÆ

Geranium rotundifolium, L.

LEGUMINOSÆ

Ulex nanus, Forst.
Medicago falcata, L.
Trifolium subterraneum, L.
Hippocrepis comosa, L.
Lathyrus aphaca, L.
— (*Orobus*) *tuberosus*, L.
— *silvestris*, L.

ROSACEÆ

Prunus cerasus, L.
Geum intermedium, Ehrh.
Rosa stylosa (v. *systyla*), Bast.
Cratægus monogyna, Jacq.

CRASSULACEÆ

Sedum fabaria, Koch

LYTHRARIÆ

Lytbrum byssopifolia, L.

ONAGRARIÆ

Epilobium roseum, Schreb.

UMBELLIFERÆ

Bupleurum rotundifolium, L.
Carum (Bunium) bulbocastanum, Koch
Cicuta virosa, L.
Ænanthe crocata, L.
Caucalis daucoides, L.

RUBIACEÆ

Galium erectum, Huds.

VALERIANÆ

Valeriana officinalis, L.
Valerianella auricula, DC.

COMPOSITÆ

Pulicaria vulgaris, Gærtn.
Filago apiculata, G. E. Sm.
— *spathulata*, Presl
Senecio (Cineraria) campestris, DC.
Arctium intermedium, Lange
— *nemorosum*, Lej.
Centaurea calcitrapa, L.
Carduus tenuiflorus, Curt.
Crepis taraxacifolia, Thuill.
Hieracium murorum, L.

CAMPANULACEÆ

Campanula rapunculus, L.

ERICACEÆ

Vaccinium myrtillus, L.
Erica cinerea, L.
Pyrola minor, Sw.
— *rotundifolia*, L.

PRIMULACEÆ

Centunculus minimus, L.

GENTIANÆ

Gentiana campestris, L.
— *germanica*, Willd.

BORAGINÆ

Cynoglossum montanum, Lamk.

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CONVOLVULACEÆ

Cuscuta europæa, L.
— *epithymum*, Murr.

PLANTAGINÆ

Littorella lacustris, L.

SCROPHULARINÆ

Verbascum blattaria, L.
— *virgatum*, With.
Linaria spuria, Miller
Limosella aquatica, L.

OROBANCHEÆ

Orobanche minor, Sutt.

CHENOPODIACEÆ

Chenopodium vulvaria, L.
— *ficifolium*, Sm.

POLYGONACEÆ

Polygonum minus, Huds.
Rumex palustris, Sm. (*limosus*, Thuill.)

EUPHORBIACEÆ

Euphorbia platyphyllos, L.
Mercurialis annua, L.

SALICINÆ

Salix russelliana, Sm.

HYDROCHARIDÆ

Hydrocharis morsus-ranæ, L.

ORCHIDÆ

Malaxis paludosa, Sw.
Cephalanthera pallens, Rich.
— *ensifolia*, Rich.
Orchis ustulata, L.
— *militaris*, L.
Herminium monorchis, Br.
Habenaria bifolia, Br.

LILIACEÆ

Ruscus aculeatus, L.
Polygonatum multiflorum, All.
Fritillaria meleagris, L.

JUNCÆ

Juncus diffusus, Hoppe
— *squarrosus*, L.
Luzula Forsteri, DC.

NAIADACEÆ

Potamogeton rufescens, Schrad.
— *acutifolius*, Link
— *obtusifolius*, Mert. et Koch

CYPERACEÆ

Eleocharis acicularis, Br. (Hooker—*Heleocharis*)
Scirpus carici, Retz. (*Blysmus compressus*, Panz.)
Carex paradoxa, Willd.
— *lævigata*, Sm.

GRAMINÆ

Setaria viridis, Beauv.
Alopecurus fulvus, Sm.
Calamagrostis lanceolata, Roth
Gastridium lendigerum, Gaud.
Bromus racemosus, L.
Hordeum silvaticum, Huds. (*Elymus europæus*, L.)

DISTRICT V.—THE BRENT

This is the smallest district, only four or five square miles of a tongue of the county somewhat similar to that of the Thame district being in the catchment-basin of the Brent. It is bounded on the east by a detached portion of the Lea district, on the north-west by the Colne district, and on the north and south by Middlesex. It is entirely on the London Clay.

The Brent rises in Middlesex half a mile from Barnet Gate in Herts, and after a run of four miles leaves our county, flows past Finchley, through the Brent Reservoir, and, joining the Grand Junction Canal at Hanwell, enters the Thames at Brentford.

This is an interesting district, chiefly owing to the presence of Totteridge Green and its ponds, in which grow *Ranunculus lingua* and *Acorus calamus*, the former however having been planted and therefore not being entitled to a place in the list of species. Totteridge Green is our only locality for *Damasonium stellatum*. It was first recorded there in 1805, by 1849 it had become very scarce, and it was last seen in 1855. *Chenopodium glaucum* has been seen much more recently in its only locality, Totteridge.

Many common plants are not recorded for the district, perhaps partly from its small size, but chiefly from its flora not having been thoroughly investigated.

The only indigenous plants in this district which are rare are the following—

CARYOPHYLLÆ

Dianthus deltoides, L.
Cerastium quaternellum, Fenzl.

ROSACEÆ

Prunus cerasus, L.

ONAGRARIÆ

Epilobium roseum, Schreb.

COMPOSITÆ

Pulicaria vulgaris, Gærtn.
Anthemis nobilis, L.
Arctium nemorosum, Lej.

BORAGINÆ

Symphytum tuberosum, L.

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CHENOPODIACEÆ

Chenopodium ficifolium, Sm.
— *glaucum*, L.

POLYGONACEÆ

Polygonum maculatum, Dyer et Trimen
Rumex palustris, Sm. (*limosus*, Thuill.)

LILIACEÆ

Fritillaria meleagris, L.

AROIDEÆ

Acorus calamus, L.

ALISMACEÆ

Damasonium stellatum, Pers.

DISTRICT VI.—THE LEA

The Lea district is the largest, comprising the whole of the eastern portion of the county south of the Cam and Ivel districts. It is bounded on the south by Middlesex, on the east by Essex, on the north by the Cam and Ivel districts, and on the south-west by the Colne district. A small portion of the county on the north of the Colne district and having Bedfordshire for its northern boundary drains into the head of the Lea;¹ and another small area on the east of the Brent district is drained by a tributary of the lower portion of the Lea, now however flowing into the New River.

The Lea rises in Bedfordshire from springs in Leagrave Marsh three miles above Luton; cuts through the Chalk escarpment before it enters Hertfordshire; and flows past Hatfield, Hertford, Ware, and several towns in the south-east corner of the county. After receiving on its left bank several streamlets whose waters are lost in the Chalk in dry weather, it flows to Hertford, where the Mimram and then the Beane join it, and from this point downwards it is navigable for barges; the Rib adds its tribute between Hertford and Ware, the Ash below Ware, and finally the Stort a little above Hoddesdon. All these rivers flow into the Lea on its north or left bank. The Mimram, or Maran, rises in Lilley Bottom near King's Walden and flows past Welwyn and through many beautiful parks. The Beane, or Bene, formerly called the Benefician, is formed by numerous small streams rising between Sandon and Weston, and is augmented at Walkern from springs in the Chalk, at Frogmore above Watton by a brook from Stevenage and Knebworth, and in Woodhall Park below Watton by the Munden Brook, dry in summer. The Rib rises in Kelshall Woods near Therfield, or in very dry years some miles lower down its valley, passes Buntingford, and a few miles below it receives the Quin, which rises at Rushing Well near Nuthamstead, and is often dry in summer as far as Braughing. The Ash rises in the winter near Brent Pelham on the borders of Essex, but for five miles down its valley it and its tributary streams are merely bournes, being dry in the summer and autumn, and its source is then a mile below Albury, where there is a spring in its bed, below which it is seldom dry. The Stort is the only affluent of the Lea, except a few small brooks below Hoddesdon, which does not entirely flow through Hertfordshire. Rising near Clavering in Essex, but having one of its tributary streams flowing from Scales Park Wood in Herts near the source of one of the feeders of the Quin, it comes into our county for a run of a quarter of a mile, then re-enters Essex, and enters Herts again at Pesterford Bridge, two miles above Bishop Stortford, from which point to its junction with the Lea it is navigable for barges and is called the 'Stort Navigation.' Here it serves as boundary between Herts and Essex. In addition to the supply from these tributary streams, the waters of the Lea are augmented on its left bank by the springs of Arkley Hole at Woolmers, and on its right bank by the Chadwell Spring between Hertford and Ware. This spring first dried up in 1898, and has done so in each succeeding year. Between Ware and Hoddesdon the Lea was formerly augmented by Amwell Spring (Emmewell or Emma's Well), but this seldom flows now, having been pumped dry by the New River Company. The Chadwell Spring is fast following in its footsteps, and Arkley Hole is also being affected. In course of time this lowering of the plane of saturation of the Chalk will affect the surface-soil and alter the character of the flora of this district. The Chadwell Spring for many years has formed the head of the New River, into which also the Amwell Spring was diverted when this water-channel was constructed. The Lea leaves the county at Waltham Cross for Middlesex, and flows into the Thames at Bow Creek below Blackwall. It is tidal as far as Lea Bridge. Below Ware the course of the Lea has been diverted for navigable purposes, and the 'Lea Navigation' to its junction with the Stort, and 'Lea and Stort Navigation' below this point, cross and re-cross the old bed of the Lea several times.

¹ In the recent revision of the county boundary for administrative purposes this portion has been transferred to Bedfordshire.

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The district drained by the Lea and its tributaries is about 500 feet in height on the north, along the downs forming the water-parting between the catchment-basins of the Thames and Ouse, the surface gradually sloping towards the south, until along the river Lea below Hoddesdon the ground is much lower and flatter than in any other part of Hertfordshire. Most of the district is on the Chalk, much covered by boulder-clay, but south-east of Furneaux Pelham, Much Hadham, Hertford, and Hatfield it is on the London Clay and its narrow margin of Reading Beds.

The old towns of Hertford and Ware are the only localities in the county for the rare *Sisymbrium irio*, which sprang up in London after the great fire of 1666, whence its name of London rocket. The true oxlip (*Primula elatior*) occurs only near the head of the Stort on the borders of Essex; the very rare *Orobanchæ cærulea* only at Hoddesdon, where it is parasitic on the milfoil (*Achillea millefolium*); and an old wall of Brocket Park is the only habitat of the almost equally rare *Galium anglicum*. *Trifolium glomeratum* is known only at Easneye near Ware; the only locality for *Stratiotes aloides*, except where it has evidently been planted, is Hatfield Park; and the ponds on Hertford Heath lay exclusive claim to *Carex bænninghausiana*. Two species usually of rare occurrence (*Polygonum dumetorum* and *Apera spica-venti*) are frequent in the district.

The Lea district has the largest number of rare plants of any, and much the largest number peculiar to it. The list is as follows—

RANUNCULACEÆ

- Ranunculus diversifolius*, *H. Wats.*
— *lingua*, *L.*
— *hirsutus*, *Curtis (sardous, Crantz)*
Helleborus foetidus, *L.*
— *viridis*, *L.*

PAPAVERACEÆ

- Papaver Lecoqii*, *Lamotte*

FUMARIACEÆ

- Fumaria Borzei*, *Ford.*
— *Vaillantii*, *Loisel.*

CRUCIFERÆ

- Nasturtium silvestre*, *Br.*
— *amphibium*, *Br.*
Sisymbrium irio, *L.*
— *Sophia*, *L.*
Erophila præcox, *DC.*
Senebiera (Coronopus) didyma, *Persoon*
Lepidium ruderales, *L.*
Iberis amara, *L.*

CARYOPHYLLÆ

- Silene anglica*, *L.*
— *noctiflora*, *L.*
Cerastium quaternellum, *Fenzl.*
Stellaria palustris, *Ehrh.*

LEGUMINOSÆ

- Trigonella ornithopodioides*, *DC.*
Trifolium subterraneum, *L.*
— *ochroleucum*, *L.*
— *glomeratum*, *L.*
Hippocrepis comosa, *L.*
Vicia (Ervum) gracilis, *Loisel.*
Lathyrus aphaca, *L.*
— (*Orobis*) *tuberosus*, *L.*
— *silvestris*, *L.*

ROSACEÆ

- Rosa silvestris*, *Woods*
— *stylosa (v. systyla)*, *Bast.*
Cratægus monogyna, *Jacq.*

CRASSULACEÆ

- Sedum fabaria*, *Koch*

HALAGOREÆ

- Callitriche obtusangula*, *Le Gall.*

ONAGRARIÆ

- Epilobium roseum*, *Schreb.*

UMBELLIFERÆ

- Bupleurum rotundifolium*, *L.*
Carum segetum, *Benth.*
— (*Bunium*) *bulbocastanum*, *Koch*
Cicuta virosa, *L.*
Sesseli libanotis, *Koch*

RUBIACEÆ

- Galium Witheringii*, *Sm.*
— *anglicum*, *Huds.*

VALERIANÆ

- Valerianella auricula*, *DC.*

COMPOSITÆ

- Pulicaria vulgaris*, *Gærtn.*
Filago apiculata, *G. R. Sm.*
— *spathulata*, *Presl*
— *gallica*, *L.*
Arctium intermedium, *Lange*
— *nemorosum*, *Lej.*
Centaurea calcitrapa, *L.*
Arnoseris pusilla, *Gærtn.*
Crepis biennis, *L.*
— *taraxacifolia*, *Thuill.*
Hypochaeris glabra, *L.*
Tragopogon pratensis, *L.*

CAMPANULACEÆ

- Campanula rapunculus*, *L.*

PRIMULACEÆ

- Primula elatior*, *Jacq.*
Anagallis cærulea, *Schreb.*

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GENTIANÆ

Erythraea pulchella, Fries

BORAGINÆ

Symphytum tuberosum, L.

Myosotis silvatica, Hoffm.

Cynoglossum montanum, Lamk.

CONVOLVULACÆ

Cuscuta epilinum, Weihe

SCROPHULARINÆ

Verbascum lychnitis, L.

— *blattaria*, L.

— *virgatum*, With.

Linaria spuria, Miller

— *decumbens*, Moench

Melampyrum cristatum, L.

OROBANCHEÆ

Orobanche major, L.

— *minor*, Sutt.

— *cærulea*, Vill.

LABIATÆ

Mentha rotundifolia, L.

Stachys ambigua, Sm.

Ajuga chamæpitys, Schreb.

CHENOPODIACÆ

Chenopodium ficifolium, Sm.

— *urbicum*, L.

— *hybridum*, L.

— *murale*, L.

POLYGONACÆ

Polygonum minus, Huds.

— *dumetorum*, L.

EUPHORBIAECÆ

Euphorbia platyphyllus, L.

Mercurialis annua, L.

SALICINÆ

Salix russelliana, Sm.

HYDROCHARIDEÆ

Hydrocharis morsus-ranæ, L.

Stratiotes aloides, L.

ORCHIDEÆ

Cephalanthera pallens, Rich.

Herminium monorchis, Br.

LILIACÆ

Ruscus aculeatus, L.

Polygonatum multiflorum, All.

Allium oleraceum, L.

Fritillaria meleagris, L.

Gagea lutea, Ker

JUNCÆ

Juncus diffusus, Hoppe

Luzula Forsteri, DC.

TYPHACÆ

Sparganium minimum, Fries

NAIADACÆ

Potamogeton rufescens, Schrad.

— *gramineus*, Fries

CYPERACÆ

Eriophorum latifolium, Hoppe

Schænus nigricans, L.

Carex teretiuscula, Good.

— *bænninghausiana*, Weihe

— *gracilis*, Curtis

— *xanthocarpa*, Degl. (? hybrid)

— *strigosa*, Huds.

GRAMINÆ

Setaria viridis, Beauv.

Alopecurus fulvus, Sm.

Phleum phalaroides, Koch

Agrostis pumila, L.

Calamagrostis lanceolata, Roth

Gastridium lendigerum, Gaud.

Apera spica-venti, Beauv.

Bromus racemosus, L.

Hordeum silvaticum, Huds. (*Elymus europæus*, L.)

A few plants enumerated in these lists are probably extinct. The white water-lily (*Nymphæa alba*), first recorded for the county by Izaak Walton in his *Compleat Angler* (1653), is probably extinct as a wild plant. It has been eradicated from the river Lea, where Walton saw it, by nursery gardeners, and wherever it is now found, which is only in ornamental waters, it has probably been planted. The great burnet (*Poterium officinale*, Hook. f., better known as *Sanguisorba officinalis*) has not been recorded since it was first gathered in 1840, near Ashwell in the Cam district. And the star-fruit (*Damasonium stellatum*), which was first recorded from its only known locality, Totteridge Green in the Brent district, by Joseph Woods in Turner and Dillwyn's *Botanist's Guide* (1805), gradually became scarcer, and could not be found there by Coleman in 1858.

On the other hand several species of recent introduction are becoming thoroughly established and are gradually extending their range in the county. The most interesting of these are the two smaller balsams (*Impatiens fulva* and *parviflora*). The presence of the former on the banks of the Grand Junction Canal at Harefield was first recorded in 1869, and by 1875 it had spread up the valleys of the Colne and Gade, through Rickmansworth and Cassiobury Park, to Hunton Bridge above Watford. The latter was first noticed at Essendon in the Lea district in 1874, and has since appeared in Cassiobury and Ashridge Parks in the Colne district. The American water-weed (*Elodea canadensis* of Hooker's flora, much better known as *Anacharis alismastrum*) was introduced into England about the year 1841; in 1852 or 1853 it was first noticed to be nearly choking the river Colne at Watford; and by 1881 it had

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thoroughly established itself in every one of our six botanical districts. In 1874 Pryor first noticed *Poterium muricatum* in the county, and only a single stray specimen of *Bromus arvensis* had then been seen in it, but by 1881 he was able to give some thirty localities for the former in the Ivel, Colne, and Lea districts, and half the number for the latter in those districts and the Cam. These and other colonists have become so perfectly naturalized that no suspicion of their exotic origin might be raised were not the history of their introduction known.

The following Rubi recorded by Mr. Pryor are not included in the district lists. The districts in which they occur are indicated by the figures 1-6—

| | | |
|---|------------------------------------|-------------------------------------|
| <i>Idæus, L.</i> 2, 3, 4, 6 | <i>Leucostachys, Schleich.</i> 2-6 | <i>Humifusus, Weibe.</i> 6 |
| <i>Plicatus, Weibe et Nees.</i> 4, 6 | <i>Lejeunii, Weibe.</i> 4, 6 | <i>Hirtus, Waldst. et Kit.</i> 4, 6 |
| <i>Affinis, Weibe et Nees.</i> 4, 6 | <i>Radula, Weibe.</i> 4, 6 | <i>Guntheri, Weibe.</i> 3, 4, 6 |
| <i>Lindleianus, Lees.</i> 4, 6 | <i>Rudis, Weibe.</i> 3, 4, 6 | <i>Bellardi, Weibe.</i> 3 |
| <i>Rhamnifolius, Weibe et Nees.</i> 3-6 | <i>Pallidus, Weibe.</i> 4, 6 | <i>Corylifolius, Sm.</i> 1-6 |
| <i>Thirsoides, Wimm.</i> 6 | <i>Rosaceus, Weibe.</i> 6 | <i>Balfourianus, Blox.</i> 6 |
| <i>Ulmifolius, Schott.</i> 1-6 | <i>Glandulosus, Bell.</i> 4, 6 | <i>Nemorosus, Blayne.</i> 2, 4, 6 |
| <i>Villicaulis, Weibe.</i> 3, 4 | <i>Præruptorum, Boulay.</i> 5 (?) | <i>Althæifolius, Host.</i> 6 |
| <i>Umbrosus, Arrh.</i> 4, 6 | <i>Hystrix, Weibe.</i> 6 | <i>Tuberculatus, Bab.</i> 4, 5, 6 |
| <i>Macrophyllus, Weibe.</i> 4, 6 | <i>Koehleri, Weibe.</i> 2, 3, 4, 6 | <i>Diversifolius, Lindl.</i> 4 |
| <i>Fusco-ater, Weibe et Nees.</i> 4 (?) | <i>Pygmæus, Weibe.</i> 4 | <i>Cæsius, L.</i> 1-4, 6 |
| <i>Sprengelii, Weibe.</i> 4, 6 | <i>Scaber, Weibe.</i> 4, 6 | <i>Pseudo-idæus, Lej.</i> 4, 6 |

CRYPTOGAMIA

The cryptogamic plants have hitherto usually been divided into the two classes Acrogens and Thallogens, but Dr. M. C. Cooke¹ has shown that this classification is inappropriate in the present state of our knowledge, and has suggested the following threefold division, which is here adopted—

| |
|--|
| Pteridophytes, including the Ferns and Fern-allies. |
| Bryophytes " " Mosses and Hepaticæ. |
| Thallophytes " " Characeæ, Algæ, Lichens, and Fungi. |

In the following account of the Hertfordshire cryptogams an attempt is made to arrive at a census of the genera and species known to occur in the county, the names of each genus being given together with the number of its species when they are not individually enumerated. The result is as follows—

| | Genera | Species | | Genera | Species |
|---------------------|--------|---------|--------------------|--------|---------|
| Pteridophytes . . . | 14 . | 24 { | Filices . . . | 12 . | 18 |
| | | | Equisetaceæ . . . | 1 . | 5 |
| | | | Lycopodiaceæ . . . | 1 . | 1 |
| Bryophytes . . . | 92 . | 219 { | Musci . . . | 61 . | 175 |
| | | | Hepaticæ . . . | 31 . | 44 |
| | | | Characeæ . . . | 3 . | 7 |
| Thallophytes . . . | 200 . | 1,061 { | Algæ . . . | 63 . | 252 |
| | | | Lichenes . . . | 21 . | 67 |
| | | | Fungi . . . | 113 . | 735 |

This gives a total of 306 genera and 1,304 species of cryptogamic plants actually recorded, but this must be much under the number present. Numerous species of Ustilagineæ (smut-fungi) undoubtedly occur, although not a single species has been recorded; moulds (Hyphomycetes) are everywhere, but very few species are on record; and although

¹ *Handbook of British Fungi*, p. 3 (1895).

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the number of species of lichens and Uredineæ has been doubled since the publication of the lists of cryptogamic plants, compiled by Mr. B. Daydon Jackson, which appeared in Pryor's *Flora*, for these two groups the greater part of the county is altogether unexplored. On the other hand it is not likely that the Pteridophytes will be added to, nor that any great accession will be made to the Bryophytes.

THE FERNS (*Filices*)

While man has in past times altered the scenery and flora of the county by clearing the forests and draining the land, perhaps one of the greatest pleasures of a stroll along our country lanes has been lost to us during the present generation by the almost total eradication of the ferns which were fairly plentiful and of varied species in our younger days. Some years ago they were uprooted and taken to London from the woods and lanes of southern Hertfordshire in cartloads, but they are now so scarce that this depredation has ceased to be profitable. There is a lane near St. Albans in which not many years ago some half-dozen species were flourishing, but the bracken is the only one now to be found there. This is not due to the rapacity of botanical collectors, but to the wholesale removal of our ferns for the London market, thence to be planted in London gardens, carry on a sickly existence for a few years or maybe only a few months, wither and die.

Neither in its soil nor in its climate, however, is Hertfordshire a county in which ferns would naturally flourish, both the soil and the air being too dry for them, and the rainfall insufficient and too intermittent.

Not a single species is recorded from every one of our botanical districts, there being no record in the Cam district even for the very common bracken (*Pteris aquilina*), which indeed is of very rare occurrence on the Chalk downs. The hart's-tongue (*Scolopendrium vulgare*) and the common polypody (*Polypodium vulgare*) are the only other ferns recorded for every district but the Cam, in which we have alone on record the male-fern (*Lastrea filix-mas*) and the adder's-tongue (*Ophioglossum vulgatum*); and in the Thame and the Brent the only recorded occurrences are of the three commoner ferns first named.

Our rarest species are *Pilularia globulifera*, found in a pond at Northaw in the Lea district, *Lastrea spinulosa* and *L. oreopteris*, recorded only for the Colne and Lea districts, and *Ceterach officinarum*, which, although rarer than those two, has occurred in the Ivel district as well as in the Colne and Lea. A single specimen of *Cystopteris fragilis* has been found in Berry Grove Wood, Aldenham, and a single specimen of *Phegopteris calcarea* at Broxbournebury, but we cannot consider these to be native ferns. They must have been casuals or escapes.

The following is a list of the Hertfordshire ferns—

POLYPODIACEÆ
Pteris aquilina, L.
Blechnum spicant, Roth
Ceterach officinarum, Willd.

Scolopendrium vulgare, Sm.
Asplenium ruta-muraria, L.
— *trichomanes*, L.
— *adiantum-nigrum*, L.

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Athyrium filix-fœmina, Roth
Polystichum aculeatum, Roth
 — *lobatum*, Sm.
 — *angulare*, Presl
Lastrea filix-mas, Presl
 — *spinulosa*, Presl
 — *dilatata*, Presl

Lastrea oreopteris, Presl
Polypodium vulgare, L.
 OPHIOGLOSSACEÆ
Ophioglossum vulgatum, L.
 MARSILEACEÆ
Pilularia globulifera, L.

The more marked varieties which have been found are *Scolopendrium vulgare*, var. *multifidum*, in the Lea district; *Athyrium filix-fœmina*, var. *convexum*, in the Colne and Lea; and *Polypodium vulgare*, vars. *acutum* and *serratum*, in the Lea.

The earliest county record is in Gerard's *Herball* (1597): 'Nicholas Belson founde [a dwarf form of *Scolopendrium vulgare*] in a gravelle lane in the way leading to Oxey parke neere unto Watforde, fiteene miles from London.' In 1737 John Blackstone recorded *Asplenium adiantum-nigrum* and *Ophioglossum vulgatum* as found near Harefield; and in 1805 Thomas Woodward recorded *Ceterach officinale* as occurring at Ashridge. The next additions, to the number of eleven, were made in 1838 by the Rev. W. H. Coleman.

THE HORSETAILS (*Equisetaceæ*)

Of the only genus of this order, *Equisetum*, the following species occur in Hertfordshire: *E. arvense*, L.; *E. maximum*, Lamk.; *E. silvaticum*, L.; *E. palustre*, L.; and *E. limosum*, L.

Equisetum arvense and *limosum* occur in all the districts, and *E. palustre* has been recorded from all but the Brent. *E. silvaticum* is our rarest horsetail. It is known to have occurred on Hitchin Common in the Ivel district from a single record, and it is somewhat plentiful in two woods in the Lea district—Bayford Wood and Bell Wood.

All the species were first recorded by Coleman in 1838.

THE CLUBMOSES (*Lycopodiaceæ*)

Of the three genera of this order, *Lycopodium*, *Selaginella*, and *Isoetes*, the first only is represented in Hertfordshire, and by only a single species, *Lycopodium clavatum*, L., which has been found in the Colne district near Tring and in the Lea in Broxbourne Wood, Pamplin being the first to record it, in 1837. The rare *L. inundatum* occurs on Harefield Common, just outside our county boundary.

THE MOSSES (*Musci*)

Although the mosses of the county have not been so carefully investigated as the flowering plants and ferns, they have not been neglected. As early as the year 1843 the Revs. W. H. Coleman and R. H. Webb printed in pamphlet form, *A Report of the Progress made in the Investigation of the Flora of Hertfordshire, with a Catalogue of Species known or reported to have been found*. In this catalogue 118 species

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of mosses were enumerated. When the *Flora Hertfordiensis* was published (in 1849) the county list had been increased by the addition of 12 species, raising the number to 130. The great majority of these records are given on the authority of the authors of the *Flora*, a few being contributed by their correspondents, William Borrer and Isaac Brown. In these lists an attempt was made to indicate the comparative abundance or rarity of the different species by putting a number after the names of those which had been found within a radius of five miles of Hertford, the rarest being marked 1, the most common 6, and others in proportion. The herbaria of Messrs. Coleman and Webb are now in the County Museum at St. Albans, where they have been deposited by the Council of the Hertfordshire Natural History Society, into whose possession they passed on the death of the Rev. R. H. Webb in 1880. A few years after they came into the hands of the Society the mosses were carefully examined and any doubtful specimens submitted to the late Mr. H. Boswell of Oxford, and in one or two instances corrections in the naming were found to be necessary. On March 18, 1884, a list of these mosses, with the localities at which they had been found, and also with some other records to bring the county list up to date, was presented to the Society, and was subsequently printed in the *Transactions*.¹ Mr. Boswell's examination of the Coleman collection has, however, made the list inaccurate in one or two particulars, and the following corrections should be noted: The species found in Panshanger Park and named *Bryum turbinatum* is pronounced by Mr. Boswell to be *Bryum carneum*, and the plant labelled *Brachythecium plumosum* by Coleman should be *Eurhynchium confertum*. *Gymnostomum ovatum*, Hedg. (*Pottia cavifolia*, Ehrh.), is by error printed *Grimmia ovata*, which is an alpine moss.

When Pryor's *Flora of Hertfordshire* was published (in 1887), the editor, Mr. B. Daydon Jackson, F.L.S., printed in the appendix another list of Hertfordshire mosses, mainly drawn up from the sources above referred to, the number of species there enumerated being 167.

The most recent addition to our knowledge of the muscology of the county is a 'List of Mosses collected in the Neighbourhood of Hertford,' by Hugh Darton,² who enumerates sixty species of which eight are new to the Hertfordshire flora. They are *Fissidens incurvus* and *viridulus*, *Tortula cuneifolia*, *Barbula sinuosa* and *rigidula*, *Cinclodotus Brebissoni*, *Physcomitrella patens*, and *Amblystegium irriguum*.

Bearing in mind that a large number of our British mosses are only to be met with in mountainous localities, and remembering that Hertfordshire is a highly cultivated county and that its southern districts are almost of a suburban character, and recollecting also that there is no considerable extent of boggy or marshy land within its area, it may be said that the moss-flora of the county is a rich and varied one. Of the 537 species recognized in Dixon and Jameson's *Handbook*

¹ *Trans. Herts Nat. Hist. Soc.* vol. iii. p. 67.

² *Ibid.* vol. ix. p. 104 (1896).

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as occurring in Britain, 175 have up to the present time been recorded as growing within the boundaries of the shire. As might be expected, woodland forms, species of arboreal habit, and those which frequent rocks of a calcareous nature, are fairly numerous. The urban districts of the county are rapidly extending, and localities which formerly possessed an interesting flora and were the habitats of several rare species, both of mosses and flowering plants, have recently been converted into building-sites. It is therefore to be hoped that in the near future increased attention may be paid to this branch of Hertfordshire botany.

The following table shows the genera and the number of species recorded for the county :—

| | | | | |
|-----------------------|----------------------|------------------------|-------------------------|---------------------|
| SPHAGNALES | | Leucobryum . . . 1 | Orthotrichum . . . 5 | Antitrichia . . . 1 |
| Sphagnum . . . 6 | Fissidens . . . 5 | Ephemerum . . . 1 | Porotrichum . . . 1 | |
| | Grimmia . . . 2 | Physcomitrella . . . 1 | Leskea . . . 1 | |
| BRYALES | | Physcomitrium . . . 1 | Anomodon . . . 1 | |
| Tetraphis . . . 1 | Acaulon . . . 1 | Funaria . . . 3 | Thuidium . . . 3 | |
| Catharinea . . . 1 | Phascum . . . 2 | Aulacomnium . . . 2 | Climacium . . . 1 | |
| Polytrichum . . . 7 | Pottia . . . 6 | Bartramia . . . 1 | Cylindrothecium . . . 1 | |
| Archidium . . . 1 | Tortula . . . 12 | Philonotis . . . 1 | Isothecium . . . 1 | |
| Pleuridium . . . 3 | Barbula . . . 10 | Webera . . . 4 | Pleuropus . . . 1 | |
| Ditrichum . . . 1 | Leptodontium . . . 1 | Bryum . . . 8 | Camptothecium . . . 1 | |
| Seligeria . . . 3 | Weisia . . . 4 | Mnium . . . 5 | Brachythecium . . . 7 | |
| Ceratodon . . . 1 | Trichostomum . . . 1 | Fontinalis . . . 1 | Eurynchium . . . 10 | |
| Dicranella . . . 3 | Cinclidotus . . . 1 | Cryphæa . . . 1 | Plagiothecium . . . 2 | |
| Dicranoweisia . . . 1 | Encalypta . . . 2 | Neckera . . . 3 | Amblystegium . . . 3 | |
| Campylopus . . . 2 | Zygodon . . . 1 | Homalia . . . 1 | Hypnum . . . 13 | |
| Dicranum . . . 2 | Ulotia . . . 2 | Leucodon . . . 1 | Hylocomium . . . 5 | |

Five small natural orders, viz., *Andreæaceæ*, *Buxbaumiaceæ*, *Sphacnaceæ*, *Timmiaceæ*, and *Hookeriaceæ* are unrepresented, nor, with the possible exception of *Buxbaumiaceæ*, is it at all probable that mosses belonging to these orders will ever be added to our list. Of the 116 British genera, 55, including only a small number of species of alpine habits, are not recorded for the county.

Of the six species of *Sphagnum*, three, viz. *S. intermedium*, *cuspidatum*, and *subsecundum*, with its varieties *contortum* and *obesum*, have been found on Bricket Wood Scrubs, while four, *S. acutifolium*, *squarrosum*, *cymbifolium*, and *subsecundum*, with its variety *obesum*, occur in the Lea valley. *Tetraphis pellucida* was discovered by Coleman in Sherrard's Park Wood, Digswell, and the rarest of the seven Hertfordshire species of *Polytrichum*—*P. urnigerum*—is recorded from Hitch Wood in the north of the county. The genus *Seligeria*, composed of minute, almost microscopic plants of chalk-loving habits, is represented by three interesting species, the rarest being *S. pusilla*, which was found growing in an old chalk-pit in Bocket Park ; *S. paucifolia* was discovered at one of the field meetings of the Hertfordshire Natural History Society growing upon chalk nodules in the Tunnel Woods near Watford ; and at another field meeting the third and commonest species was met with in a chalk-pit near Rickmansworth. Two species of *Campylopus* occur, namely *C. pyriforme* in Berry Grove Wood, Aldenham, and *C. flexuosus* noted by

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Coleman from Dawley's Wood, Tewin. On No-Man's-Land and the other dry gravelly heaths of Mid Herts such species as *Racomitrium canescens*, which especially affect such localities, will be found. Six of the twelve British species of *Pottiæ* occur; they are, *P. recta*, *truncatula*, *intermedia*, *minutula*, *Starkeana*, and *lanceolata*, and of these the first and fifth are the rarest. The pleurocarpous mosses are on the whole very well represented.

THE LIVERWORTS (*Hepaticæ*)

Forty-four species of *Hepaticæ* were known to the Rev. W. H. Coleman as occurring in the county, a list of them being published in Appendix V. to the *Flora Hertfordiensis*. Among the possessions of the Hertfordshire Natural History Society is a manuscript in Mr. Coleman's handwriting in which the localities are recorded, and these, with a few notes by other observers, were published in the *Transactions* of the Society in 1893.¹ Since that time the list has not been added to.

The following are the genera represented in Hertfordshire, with the number of species in each genus—

| MARCHANTIACEÆ | JUNGERMANNIACEÆ | | |
|----------------------|--------------------|----------------------|-----------------------|
| Marchantia . . . 1 | Frullania . . . 2 | Lophocolea . . . 2 | Jungermannia . . . 7 |
| Conocephalus . . . 1 | Lejeunea . . . 1 | Chiloscyphus . . . 1 | Nardia 1 |
| Asterella 1 | Radula 1 | Kantia 1 | Fossombronina . . . 1 |
| Lunaria 1 | Porella 1 | Trichocolea . . . 1 | Pellia 2 |
| Riccia 1 | Lepidozia . . . 1 | Blepharozia . . . 1 | Aneura 2 |
| Ricciella 1 | Odontoschisma . 1 | Scapania 3 | Metzgeria 1 |
| Ricciocarpus . . 1 | Cephalozia . . . 2 | Diplophyllum . . 1 | Sphærocarpus . . . 1 |
| | | Plagiochila . . . 1 | ANTHOCEROTACEÆ |
| | | Eucalyx 1 | Anthoceros 1 |

THE STONEWORTS (*Characæ*)

The stoneworts, although a very small group of plants, do not fall into any one of the larger classes. Linnæus first placed them amongst the cryptogamic plants (near the lichens), and then amongst the lower phanerogamic plants, in which view he was followed by Jussieu, De Candolle, Brown, and Leman. In 1835 Fries gave them their highest position, considering them to be dicotyledons; a year or two later Endlicher assigned them their lowest position—in the middle of the Algæ, which he considered to be the lowest class of plants. Lindley in 1833 placed them between the *Hepaticæ* and the Fungi, but in 1845 amongst the Algæ, the view held by Von Martius, Agardh, and Wallroth, all of whom considered them to be *Confervæ*. In 1845 Brongniart placed them (doubtfully) in the *Acrogens* above the ferns and their allies; and in 1857 Berkeley referred them to the same class, but put them below the *Hepaticæ*.² They are now given a rank equal to that of the ferns, mosses, lichens, etc., the Algæ being considered their nearest allies.

¹ *Trans. Herts Nat. Hist. Soc.*, vol. vii. p. 233.

² See Lindley's *Vegetable Kingdom*, pp. xliii.–liv. and 26 (3rd ed. 1853), and Berkeley's *Cryptogamic Botany*, p. 424 (1857).

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They are entirely aquatic, and have been termed by their chief British investigators, Messrs. H. and J. Groves, 'the pioneers of aquatic vegetation,' for they play the same part in the water as mosses do on the land. They may generally be found in stagnant water, lakes, and slow streams. The term 'stonewort' had been given to them on account of the amount of lime which some species secrete.

Of the thirteen British species of *Chara*, three of *Tolypella*, and seven of *Nitella*, the following are present in Hertfordshire¹—

| | |
|--|----------------------------------|
| <i>Chara fragilis</i> , Desv. | <i>Nitella translucens</i> , Ag. |
| — <i>vulgaris</i> , L. (= <i>C. foetida</i> , Braun) | — <i>flexilis</i> , Ag. |
| <i>Tolypella glomerata</i> , Chev. | — <i>opaca</i> , Ag. |
| — <i>intricata</i> , Leonh. | |

Fruits or seeds of *Chara*, probably of existing species, have been found in the ancient Hitchin lake-bed, but the genus existed in Britain long before the Pleistocene period, occurring in Jurassic times in beds of Wealden age.

THE ALGÆ

The Algæ are a very diverse class of plants, including such groups as the seaweeds, confervas, desmids, and diatoms. All are aquatic or hygrophilous, for some live on wet rocks or damp walls; but very few of these are recorded for the county, nearly all our known species frequenting ponds and slow streams. The only rivers in which they have here been found are the Lea and the New River, all our other streams apparently being too rapid for them.

Our knowledge of the Algæ of Hertfordshire, exclusive of the Diatomaceæ, is almost entirely derived from Hassall's *British Freshwater Algæ* (1845), with a few records from the *Transactions of the Hertfordshire Natural History Society*. Hassall records 120 'species' as occurring in the county, nearly all being from the neighbourhood of Cheshunt, with a few from Hertford Heath and one from Royston, but many of his species are only varieties or forms of others, and a few cannot now be identified. Excluding these, the number recorded by Hassall is reduced to eighty-six, and the total number now known is ninety-six, as in the following table—

| | | | | |
|------------------------|----------------------|-----------------------|-----------------------|-------------------------|
| COCOPHYCÆ | | Closterium . . . 6 | Mesocarpus . . . 7 | CYSTIPHORÆ |
| Pleurococcus . . . 1 | Micrasterias . . . 3 | Staurospermum . . . 4 | Chroococcus . . . 1 | |
| Porphyridium . . . 1 | Euastrum . . . 3 | SIPHOPHYCÆ | | NEMATOGENÆ |
| Scenedesmus . . . 1 | Cosmarium . . . 2 | Vaucheria . . . 7 | NEMATOPHYCÆ | |
| Pediastrum . . . 1 | Arthrodesmus . . . 1 | Ædogonium . . . 16 | Bulbochaete . . . 1 | Oscillatoria . . . 3 |
| Chlamidococcus . . . 2 | Staurostrum . . . 2 | Hormiscia . . . 1 | Stigeoclonium . . . 4 | Lyngbya . . . 1 |
| Volvox 1 | BOTRYDIACÆ | | Draparnaldia . . . 3 | Rivularia . . . 1 |
| Hyalotheca 2 | Zygnema 4 | | | Gloiostrichia . . . 1 |
| DESMIDIÆ | | Spirogyra 11 | | RHODOPHYCÆ |
| Desmidium 1 | Sirogonium 2 | | | Batrachospermum . . . 2 |

¹ From the list, with localities, of the Characeæ of the South Midlands, given by Mr. James Saunders in *Trans. Herts Nat. Hist. Soc.* vol. ix. p. 25 (1896).

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The classification and nomenclature adopted are in accordance with Cooke's *British Freshwater Algæ* (1882-4) and his *British Desmidiæ* (1886-7), except that his order Zygoephyceæ is divided into the two families Desmidiæ and Botrydiaceæ, the desmids forming such a natural group that it is well to keep them separate.

The order Coccophyceæ and the family Desmidiæ contain the species of most interest. Of the two species of *Cblamidococcus* (the old genus *Protococcus*), our only record of *C. nivalis* is in a paper by Mr. R. B. Croft 'On the Occurrence of Red Snow in Hertfordshire.'¹ This species 'was regarded by Bauer as a fungus, by Robert Brown as an alga, and by Baron Wrangel as a lichen.'² Mr. Croft doubted the colour of the snow being due to the alga, believing it to be caused by the presence of the flagellate animalcule *Euglena acus*, but he sent specimens of the melted snow to three observers, including Mr. Saville Kent, and each detected the presence of *Cblamidococcus*. It is known, however, that snow has been coloured red and green in Spitzbergen by *Euglena sanguinea* and *E. viridis*.³ With regard to the other species of *Cblamidococcus*, *C. pluvialis*, we have an interesting observation by Mr. C. W. Nunn of Hertford. The phenomenon of 'alternation of generations' exhibited by this species is well known. It is accompanied by a change in colour from red to green and back again to red. But for ten years in succession Mr. Nunn noticed the alga appearing in two tanks in his garden not ten yards apart, red in one tank and green in the other, and never changing colour.⁴

The pretty *Volvox globator*, always an interesting object under the microscope, has been found several times at field meetings of the Hertfordshire Natural History Society, and has frequently been exhibited at the evening meetings.

The desmids are nearly all free-swimming plants living in fresh and clear water, and chiefly frequenting shallow pools and very gentle streams. The rarer Hertfordshire species are *Hylacotheca mucosa*, *Closterium setaceum*, *Micrasterias furcata*, and *Stauroastrum muricatum*.

The Florideæ, which are mostly marine, are represented only by our two species of *Batrachospermum*, *B. moniliforme*, a species prolific in varieties, of which we have three, and *B. atrum*, a very pretty species. Both frequent streams and ditches.

The Diatomaceæ have received more attention in the county than any of the other families of Algæ. Hassall⁵ recorded twenty-four species from the neighbourhood of Cheshunt, of which one is a form of another, and two cannot now be identified. Mr. Isaac Robinson⁶ gave a list of ninety-eight species collected in the neighbourhood of Hertford,

¹ *Trans. Herts Nat. Hist. Soc.* vol. i. p. 170 (1881).

² Cooke's *Algæ*, p. 54.

³ Prof. Meyen, in *Ann. and Mag. Nat. Hist.* Aug. 1848.

⁴ 'Notes on Protococcus,' *Trans. Herts Nat. Hist. Soc.* vol. i. p. xlv. (1882).

⁵ *British Freshwater Algæ* (1845).

⁶ 'The Diatomaceæ . . .' *Trans. Herts Nat. Hist. Soc.* vol. iii. p. 9 (1884).

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and Mr. Francis Ransom¹ a list of twenty-nine additional species found chiefly in the north of the county. A few years later Mr. Robinson² combined these two lists into one and added twenty-six species, increasing the number to 153. His list includes eighteen of Hassall's species, leaving three to add, which bring up the total number to 156, as in the following enumeration—

| | | | |
|-----------------------|----------------------|---------------------|-----------------------|
| Epithemia . . . 8 | Tryblionella . . . 2 | Synedra . . . 13 | Achnanthes . . . 3 |
| Euonotia . . . 1 | Cymatopleura . . . 4 | Cocconema . . . 4 | Achnanthidium . . . 2 |
| Cymbella . . . 3 | Nitzschia . . . 9 | Gomphonema . . . 12 | Diatoma . . . 3 |
| Amphora . . . 2 | Amphipleura . . . 1 | Meridion . . . 1 | Tabellaria . . . 2 |
| Cocconeis . . . 2 | Navicula . . . 25 | Himantidium . . . 3 | Melosira . . . 1 |
| Cyclotella . . . 3 | Pinnularia . . . 15 | Odontidium . . . 4 | Orthosira . . . 3 |
| Campylodiscus . . . 2 | Stauroneis . . . 5 | Denticula . . . 2 | Encyonema . . . 2 |
| Surirella . . . 10 | Gyrosigma . . . 4 | Fragillaria . . . 2 | Colletonema . . . 3 |

This list is arranged in accordance with the best work on the British diatoms, and the latest although published nearly half a century ago, Smith's *Synopsis of the British Diatomaceæ* (1853-6), except that *Gyrosigma* has been substituted for *Pleurosigma*, having the priority by eight years. The species admitted are very nearly the same as the 135 enumerated in Pryor's *Flora* (pp. 518-20), with the addition of the species since added by Mr. Robinson. *Frustrulia viridis* in the *Flora* is the same diatom as *Pinnularia viridis*, *Cocconema ventricosa* of Hassall appears to be *C. parvum* of Smith, and *Bacillaria paradoxa* was entered in error, Hassall not having been sure of the locality of his specimen, and saying that the *less likely* supposition was that it was gathered by himself in the neighbourhood of Cheshunt.

The following appear to be our rarer species: *Cyclotella rotula*, *Surirella amphioxys*, *Cymatopleura parallela*, *Nitzschia vivax*, *Navicula minutula*, *N. tumida*, *Synedra hamata*, *Cocconema parvum*, and *Achnanthes subsessilis*. So little is known of the distribution of the diatoms in Britain that some of these species may be more frequent than might be supposed from the published records of their occurrence.

The rare *Achnanthes subsessilis* was found by Mr. Robinson³ in the saucer of a flower-pot in his garden at Hertford. He mounted from this saucer on a slide a single drop of water, which he found to yield upwards of 200,000 separate frustules, and he estimated that these occupied only about one-twenty-fifth part of the drop. In further illustration of the minuteness of diatoms he mounted a slide of them with a very small needle (of the size known as No. 10), and was able to show^f under the microscope, within the eye of the needle, several hundreds of diatoms of many different species; and he also mentioned in the paper referred to that if four specimens of one of the smaller Hertford species, *Surirella minuta*, were placed in a row, the length of that row would equal the thickness of an ordinary sheet of note-paper.

Diatoms are easily distinguishable from the rest of the Algæ by

¹ 'Diatoms; their Nature and Habits,' *op. cit.* p. 206 (1885).

² 'Observations on Diatomaceæ,' *op. cit.* vol. iv. p. 199 (1887).

³ See his paper in *Trans. Herts Nat. Hist. Soc.* vol. iii. p. 4.

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having a siliceous epidermis which is incombustible and not subject to decomposition. They are a most interesting group, partly on account of their movements, which differ altogether from the movements of desmids.

THE LICHENS (*Lichenes*)

Lichens are cellular plants intermediate between the algæ and the fungi, having a thallus like that of the fungi, and gonidia by which they are allied to the algæ. The vegetative structure developed from the reproductive cell is called a mycelium, and on the hypothesis that the filamentous hyphæ of which it consists are parasitic upon algal gonidia the theory has been broached that the lichens are merely a class of parasitic fungi, nearly allied to the Ascomycetes or even belonging to them.

This 'dual-lichen hypothesis' of Schwendener is endorsed by Sachs,¹ but it is regarded by the highest authority on the British lichens, the Rev. W. A. Leighton,² as 'the baseless fabric of a vision.'

The thallus of the lichens consists of three cellular layers: (1) the cortical layer on the upper surface, forming the outer covering of the thallus; (2) the gonidial layer, consisting of bright-green spherical cells; and (3) the medullary layer, the colourless cells of which enclose the gonidia on the under side of the thallus. This layer varies much in structure in different kinds of lichens, its lower surface sometimes having rootlike filaments which attach it to the surface upon which it grows but do not obtain nourishment from it as do the homologous filaments of the fungi. The gonidia vary in colour from a yellowish to a bluish green, the chlorophyll or other green granular matter which they contain being generated by the action of light. The reproductive system is too complicated to be described here, but it may be mentioned that the spores are contained in asci or thecæ, as in the Ascomycetes, and usually are eight in number.

Lichens derive all their nutrition from the atmosphere, and for their perfect growth require a pure air. They give beautiful patches of colour to the trees and rocks, old palings and walls, stones and earth, on which they grow, most luxuriantly in damp situations.

Our knowledge of the lichens of Hertfordshire is chiefly derived from a few records in the *Transactions of the Hertfordshire Natural History Society* of species found at field meetings of the society in Bricket Wood and the Tunnel Woods, Watford, and from a manuscript list by the Rev. W. H. Coleman of species found in the neighbourhood of Hertford. The noteworthy species are *Calicium melanophæum* found on fir trees in Bricket Wood, *Peltigera polydactyla* on moss-covered ground in Oxhey Wood, *Lecanora phlogina* on trees in the Tunnel Woods, and *Pertusaria globulifera* on trees in the same woods and also in Bricket Wood. The extensive woods of Wormley and Broxbourne in the east of the county

¹ *Text-book of Botany*, p. 262 (1875).

² *Lichen Flora of Great Britain*, p. xvii. (3rd ed. 1879).

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ought to yield a good number of species, but we have not a single record from them.

The nomenclature and sequence of species in the following list is in accordance with Leighton's *Lichen Flora*, the thirty-five Herts species recorded in Pryor's *Flora* being here increased to sixty-seven.

COLLEMACEI

- Collema pulposum* (Bernh.)
- *cristatum* (Hoffm.)
- Leptogium lacerum* (Ach.)

LICHENACEI

- Calicium melanophæum*, Ach.
- *hyperellum*, Ach.
- *trachelinum*, Ach.
- *curtum*, Borr.
- Bæomyces rufus*, DC.
- Cladonia pyxidata*, Fr.
- *pyxidata*, var. *fimbriata*, Hoffm.
- *furcata*, Hoffm.
- *silvatica*, Hoffm.
- *rangiferina*, Hoffm.
- Usnea barbata* (L.), var. *plicata* (L.)
- Alectoria jubata* (L.)
- Evernia furfuracea*, Mann.
- *prunastri* (L.)
- Ramelina calicaris* (Hoffm.)
- *farinacea* (L.)
- *fraxinea* (L.)
- *fastigiata* (Pers.)
- *polinaria*, Ach.
- Peltigera canina* (L.)
- *polydactyla*, Hoffm.
- Parmelia caperata* (L.)
- *olivacea* (L.)
- *physodes* (L.)
- *perlata* (L.)
- *Borreri* (Turn.)
- *perforata*, Wulf.
- *saxatilis* (L.)
- Physcia parietina* (L.)
- *ciliaris* (L.)
- *pulverulenta* (Schreb.)

LICHENACEI (continued)

- Physcia stellaris* (L.)
- — var. *tenella* (Scop.)
- Placodium murorum* (Hoffm.)
- Lecanora candellaria* (Ach.)
- *varia* (Ehrh.)
- *atra* (Huds.)
- *subfusca* (L.)
- *parella* (L.), forma *Turneri* (Sm.)
- *albella* (Pers.)
- *phlogina* (Ach.)
- *sophodes* (Ach.)
- Pertusaria communis*, DC.
- *fallax* (Pers.)
- *faginea* (L.)
- *globulifera* (Turn.)
- *leioplaca* (Ach.)
- Phlyctis argena* (Ach.)
- Lecidia ostreata* (Hoffm.)
- *quernea* (Dicks.)
- *parasema* (Ach.)
- *uliginosa* (Schrad.)
- *canescens* (Dicks.)
- *myriocarpa* (DC.)
- *denigrata*, Fr.
- *tricolor* (With.)
- *caradocensis*, Leight.
- *sabuletorum*, Flk.
- *cupularis* (Ehrh.)
- Xylographia flexella* (Ach.)
- Opegrapha atra*, Pers.
- *varia*, Pers.
- Arthonia astroidea*, Ach.
- *Swartziana*, Ach.
- Graphis scripta*, Ach.

THE FUNGI

Most of the field meetings of the Hertfordshire Natural History Society are held in the spring and early summer, but there is usually one meeting in the autumn which is called a 'fungus foray,' its object being to investigate the fungus flora of a definite area at the time of the year when the largest number of species is likely to be found. These forays were commenced in the year 1882, and have varied in date from October 13th to November 4th. The following localities have been visited, some of them several times :—In the Colne district : Cassiobury Park, Grove Park, the Tunnel Woods and Aldenham Woods, in the neighbourhood of Watford ; Bricket Wood, between Watford and St. Albans ; Verulam Woods, the Hollows, and Gorhambury Park,

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St. Albans ; Aldbury and Ashridge Park, Tring. In the Lea district: Hatfield Park ; Digswell Park and Sherrards Park Wood near Welwyn ; and the Broxbourne Woods. On each of these occasions, except in 1896, the society had the benefit of the presence of either Dr. M. C. Cooke or Mr. George Massee, sometimes also with Mr. Worthington Smith and Dr. H. T. Wharton, who have furnished lists of the fungi for publication in the *Transactions* of the Society. From the year 1888 all the lists have been contributed by Mr. Massee. It is to these lists that our knowledge of the fungi of the county is almost entirely due, and they have furnished nearly every record here given, except the Uredineæ and the Myxomycetes or those of Mycetozoa.

The various groups of fungi will not here be treated in quite a uniform manner. A complete list of species of the Mycetozoa of the county is contributed by the Herts Natural History Society's recorder of this group, Mr. James Saunders, but of all the other fungi lists of the genera only are given, the number of species of each genus which have been found in Hertfordshire being denoted by a figure after its name, forming a census of the fungi at present known to occur in the county. From insufficient knowledge the Tuberaceæ, Hysteriaceæ, Ustilagineæ, and Sphærospideæ are omitted, and so also are the microbes—Schizomycetes and Saccharomycetes.

This is not the place to treat of the classification or the morphology of the fungi in general, but on account of the great interest attaching to the metamorphoses through which the Uredineæ pass, a brief account of the life-cycle of these microscopic leaf-fungi is given in accordance with the views of their chief British investigator, Mr. Charles B. Plowright, whose nomenclature is followed. For the same reason the Mycetozoa are similarly treated (by Mr. Saunders), in this order Mr. Arthur Lister being the authority followed. In all the other groups the classification, nomenclature, and sequence of genera (and also of species when mentioned) are in accordance with Dr. M. C. Cooke's *Handbook of British Fungi* (1871), modified as to the grouping of the orders chiefly in accordance with his latest views as expressed in his *Introduction to the Study of Fungi* (1895).

The fungi which are known to occur in Hertfordshire belong to the following orders (numbered) and larger divisions—

| | | | |
|----------------|---|-----------------------------|---------------------|
| Basidiomycetes | { | 1. Hymenomycetes | Mushroom-like fungi |
| | | 2. Gastromycetes | Puff-ball fungi |
| | | 3. Uredineæ | Rust fungi |
| Ascomycetes | { | 4. Pyrenomycetes | Capsular fungi |
| | | 5. Discomycetes | Discoid fungi |
| | | 6. Physomycetes | Conjugating fungi |
| | | 7. Hyphomycetes | Moulds |
| | | 8. Myxomycetes or Mycetozoa | Slime fungi |

The Hymenomycetes and Gastromycetes are the only orders of the division of the Basidiomycetes, and comprise all the fungi which have naked spores borne on short and thick supports called basidia. Nearly all the larger fungi which grow on the ground belong to this division,

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but it includes some species which grow on trees, decayed wood, etc. In the division of the Ascomycetes the spores are not naked or exposed, being enclosed in a delicate membrane or spore-sac. Its orders Pyrenomycetes and Discomycetes include the rest of the larger fungi growing on the ground or on fallen branches, old stumps, etc., with many smaller forms growing on dead wood and living plants. This division also includes the Tuberaceæ and Hysteriaceæ. The remaining orders cannot be grouped in larger divisions, none having sufficiently important characters in common, except the Uredineæ and Ustilagineæ, which it has been suggested should be grouped together as Protobasidiomycetes.

I. HYMENOMYCETES

| | | | | | | | |
|-----------------|-----|-----------------|----|-----------------|---|-----------------|----|
| AGARICINI | | Lentinus . . . | 1 | Merulius . . . | 1 | Corticium . . . | 11 |
| Agaricus . . . | 337 | Panus . . . | 2 | Fistulina . . . | 1 | Peniophora . . | 6 |
| Coprinus . . . | 11 | Lenzites . . . | 2 | HYDNEI | | Cyphella . . . | 1 |
| Bolbitius . . . | 1 | POLYPOREI | | Hydnum . . . | 2 | CLAVARIÆ | |
| Cortinarius . . | 31 | Boletus . . . | 9 | Radulum . . . | 2 | Clavaria . . . | 14 |
| Paxillus . . . | 3 | Strombilomyces | 1 | Glandinia . . . | 2 | Calocera . . . | 2 |
| Hygrophorus . | 18 | Polyporus . . . | 20 | THELEPHORÆ | | Typhula . . . | 1 |
| Lactarius . . . | 25 | Fomes . . . | 1 | Craterellus . . | 1 | TREMELLINÆ | |
| Russula . . . | 28 | Polystichus . . | 2 | Thelephora . . | 1 | Tremella . . . | 3 |
| Cantherellus . | 1 | Poria . . . | 2 | Stereum . . . | 5 | Ulocolla . . . | 1 |
| Nyctalis . . . | 2 | Trametes . . . | 1 | Hymenochæte | 2 | Hirneola . . . | 1 |
| Marasmius . . | 12 | Dædalia . . . | 1 | Coniophora . . | 1 | Dacrymyces . . | 1 |

There are thus 570 species of Hymenomycetes known to occur in Hertfordshire. The total number of British species in Cooke's *Hand-book* is 1,044, and although the number has been largely increased since 1871, it must be admitted that our record is not a poor one.

Nor are we wanting in rare and interesting species. Taking the sub-genera of the genus *Agaricus* in their proper order, *Ag.* (*Amanita*) *excelsus* has been found in Gorhambury Park; *Ag.* (*Lepiota*) *gliodermus* in Broxbourne Woods, the second British locality; *Ag.* (*L.*) *sistratus* in Sherrards Park Wood; and *Ag.* (*Armillaria*) *ramentaceus*, (*Tricholoma*) *resplendens*, (*T.*) *albus*, and (*Clytocybe*) *hirneolus* have occurred in Broxbourne Woods. Of *Ag.* (*C.*) *Sadleri* we have the second and third British records, Ashridge Park in 1894 and Cassiobury Park in 1897, the species having first been found in Britain in the Botanic Gardens, Glasgow. *Ag.* (*Pleurotus*) *striatulus* and (*Collybia*) *ozes* are recorded from Broxbourne Woods, and the last-named also from Ashridge Park; and *Ag.* (*Collybia*) *bibulosus*, (*Mycena*) *amictus*, *ætites*, *pullatus*, and *gypseus*, and (*Omphalia*) *glaucophyllus* from Sherrards Park Wood. The next in order are two very noteworthy finds. *Ag.* (*Leptonia*) *euochrous*, a species which had only once before been found in Britain, was detected in the Ashridge Woods in 1894, and *Ag.* (*Nolania*) *nigripes* in Aldenham Woods in 1886, this being the first British record. *Ag.* (*Pholiota*) *Cookii* and (*Hebeloma*) *perbrevis* have been found in the Broxbourne Woods, and *Ag.* (*H.*) *sina-pizans* and (*Crepidotus*) *calolepis* in Sherrards Park Wood. *Ag.* (*Psalliota*) *elvensis* has been found in Gorhambury Park, (*P.*) *dermoxantha* in Cassio-

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bury Park, and (*Hypholoma*) *hypoxanthus* in Sherrards Park Wood. In 1896 a species of the same sub-genus new to Britain—*Ag. (H.) violaceo-ater*—was found by the present writer in the Hollows, Gorhambury, and was sent to Mr. Massee for determination. The last *Agaricus* to be mentioned is *Ag. (Psathyrella) aratus*, which was found in 1893 in Sherrards Park Wood, the second British locality.

Of the rest of the Agaricini we have the following rare species : *Cortinarius azureus* found in Sherrards Park Wood ; *Paxillus Alexandri* in Hatfield Park in 1890, being the second British specimen, the first one having been found in Hatfield Park, Essex, in 1888 ; *Lactarius cremor* in Sherrards Park Wood ; *Russula barlæ* in Ashridge Park ; and *Nyctalis cremor* in Sherrards Park Wood. Of the rarer Polyporei we found *Strobilomyces strobilaceus* under an oak tree in Grove Park in 1895, mentioned by Mr. Massee at the time as ‘ the rarest and most interesting of British fungi,’ and *Poria sanguinolenta* in Cassiobury Park in 1897. And lastly the rarer Clavariæ are represented by *Clavaria stricta*, found by Mr. Henry Warner in Broxbourne Woods in 1892 after the fungus foray held there.

2. GASTROMYCETES

| | | | |
|-----------------|------------------|-------------------|-----------------|
| Phallus . . . 1 | Bovista . . . 1 | Scleroderma . . 3 | Sphærobolus . 1 |
| Geaster . . . 2 | Lycoperdon . . 5 | Cyathus . . . 1 | |

The well-known stinkhorn (*Phallus impudicus*) is of frequent occurrence, and on one occasion it was recognized by its smell and only found after a vigilant search. A specimen of *Geaster fornicatus* found near Watford was exhibited at a recent meeting of the Hertfordshire Natural History Society, and several specimens of *G. Bryantii* were some years ago found by the writer growing on a roadside bank near Bow Bridge, between St. Albans and Redbourn. One was sent to Dr. M. C. Cooke for determination and the others are now in the County Museum at St. Albans. *Lycoperdon saccatum* and *excipuliforme* have been found in the wood above Aldbury, and *Scleroderma bovista* and *verrucosum* in Digswell Park, the latter species also in Gorhambury Park.

3. UREDINEÆ

| | | | |
|------------------|-------------------|------------------|---------------|
| Uromyces . . 4 | Phragmidium . 5 | Melampsora . 1 | Cæoma . . . 1 |
| Puccinia . . 20 | Endophyllum . 1 | Coleosporium . 3 | Æcidium . . 1 |
| Triphragminium 1 | Gymnosporangium 2 | Uredo . . . 1 | |

In several orders of the fungi there are species which are parasitic on the leaves of flowering plants and on the fronds of ferns, but most of the microscopic leaf-fungi and all those which in the most conspicuous stage of their existence are known as ‘ cluster-cups ’ belong to the Uredineæ or to the Ustilagineæ, which until recently were considered to be families of the Coniomycetes or dust-like fungi, this term appertaining to their spores, which are their chief feature.¹ Indeed it is by their

¹ The nomenclature in Plowright's *British Uredineæ and Ustilagineæ* is followed in treating of the Uredineæ.

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spores that we know one from another, they only being visible on the surface ; the mycelium is hidden in the tissues of the host-plant and consists of long and slender filaments called hyphæ which sometimes pervade the whole of the host-plant except its root.

The cycle of changes through which the Uredineæ pass is very varied. In the simplest life-cycle there sprouts from the teleutospore a tiny hyaline tube, the promycelium, from each segment of which there arises a short branch ; the distal end of each branch falls off as the promycelial spore, moisture causes it to germinate, and if it should happen to fall upon a living leaf of the host-plant proper to its species the germ-tube enters the tissue of the leaf and gives rise to mycelial hyphæ from which teleutospores are developed, usually on the under surface of the leaf. The mycelium does not always directly give rise to teleutospores ; frequently it first produces organs called spermogonia, and then the most highly coloured and conspicuous of all kinds of spores, the æcidiospores. These are the true cluster-cups, and at one time they constituted the then important genus *Æcidium*, but now nearly all the species formerly referred to this genus are known to have been founded on the æcidiospore stage of species belonging to other genera. The æcidiospores may directly produce teleutospores, or firstly uredospores, which in their turn may produce teleutospores or may for some generations reproduce themselves as uredospores, but teleutospores must eventually be formed.

Perhaps the most interesting phenomenon in the life-history of the leaf-fungi is the passing in some species of a part of their life on one kind of plant and another part on a different kind. This is called heterœcism, and it was first proved to exist in 1864. More than a century earlier it was generally recognized that the presence of the barberry (*Barbarea vulgaris*) is injurious to growing crops of wheat and of some other cereals ; but the cause was unknown, the fact often disputed, and the remedy therefore often neglected, until it was proved by De Bary that *Puccinia graminis*, the microscopic fungus which attacks the wheat plants, is a later stage in the life-cycle of *Æcidium berberidis*, the cluster-cup of the barberry. As another instance of heterœcism may be mentioned one of the best known of all the cluster-cups, which occurs on the leaves of the lesser celandine (*Ranunculus ficaria*) and on those of *R. repens* and *R. bulbosus*. This has been known until recently as *Æcidium ranunculacearum*, and has also been named *Æ. ficariæ*, but it is now found to be an early (æcidiospore) stage of *Uromyces poæ*, the mature form of which (the teleutospore) occurs on the grasses *Poa trivialis*, *P. pratensis*, and *P. annua*. The true *Uromyces ficariæ* is only known to occur on the lesser celandine.

Owing to the various forms which the spores assume in their different stages, and to heterœcism, to which about fifty species are subject, the number of recorded species of Hertfordshire Uredineæ has had to be considerably reduced. As an instance of the record of a species under three names may be mentioned the rose-pest *Phragmidium subcorticatum*,

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recorded by Dr. M. C. Cooke as *P. bullatum* (on twigs of *Rosa canina* at Barnet), by Mr. E. M. Chater as *P. mucronatum* (on rose-leaves at Watford), and by Mr. J. W. Walker as *Lecythea rosæ* (on roses in the neighbourhood of Watford).

Cluster-cups are pests, injuring the plant on which they grow, and we have one instance of the apparent extinction by their means of a rare plant in a locality in which it had long been established. *Anemone ranunculoides* formerly grew in the corner of a field at Abbot's Langley. In May, 1881, the present writer saw a few plants there with leaves thickened and some also elongated by the hyphæ of *Æcidium punctatum*. The plants looked far from healthy, and on a visit to the spot some years later not one was to be found.

Very little is known of the distribution of the leaf-fungi in Hertfordshire; in fact nearly all our records relate to the south-west of the county, chiefly to the neighbourhood of Watford and St. Albans. The eighteen species of Uredineæ recorded in Pryor's *Flora* are now however brought up to forty, all of which are found in the neighbourhood of Watford. There is still a wide field in the county for further investigation of this interesting group of plant-parasites.

4. PYRENOMYCETES

| | | | |
|-------------------|-------------------|----------------------|-------------------|
| Uncinula . . . 1 | Nectria . . . 1 | Dothidea . . . 1 | Sphæria . . . 3 |
| Rhytisma . . . 2 | Xylaria . . . 3 | Microstoma . . . 1 | Sphærella . . . 1 |
| Hypochrea . . . 1 | Daldinea . . . 1 | Valsa 4 | Venturia . . . 1 |
| Hypomyces . . . 1 | Hypoxyton . . . 1 | Bysossphæria . . . 1 | |

The rarer species are *Daldinea concentrica*, *Microstoma album*, *Bysossphæria aquilla*, and *Sphærella fragariæ*, from Cassiobury Park, *Valsa corylina* from Hatfield Park, and *Venturia glomerata* recorded by Dr. Cooke in *Grevillea* (vol. iii. p. 69) as found by him at Barnet in 1874.

5. DISCOMYCETES

| | | | |
|-------------------|--------------------|------------------|-------------------|
| Morchella . . . 1 | Geoglossum . . . 1 | Helotium . . . 5 | Phacidium . . . 2 |
| Helvella . . . 1 | Peziza . . . 10 | Bulgaria . . . 1 | |

This is an interesting order, comprising several esculent and some very pretty species. Of the former we have only the common morel (*Morchella esculenta*) and the pallid helvella (*Helvella crispa*); of the latter we have several species of *Peziza*, the prettiest being the common *P. aurantia* and *P. virginea*, one of a brilliant orange and the other of a pure white colour, the rather local carmine peziza (*P. coccinea*) found in a wood near Watford, and the very rare *P. luteo-nitens* detected in 1894 on the Chalk slope between Aldbury and Ashridge Park. The colour of this is a bright orange-yellow. Another rare species, *P. ampliata*, was found in Digswell Park in 1893.

6. PHYSONOMYCETES

The only species of this order we have on record are *Cystopus can-*

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didus which grows on living plants, *Acrostalagmus cinnabarius* which prefers decaying plants, and the pest, *Peronospora infestans*, which produces the well-known potato-disease.

7. HYPHOMYCETES

Of the moulds the only species we have on record are *Tubercularia æsculi* and *vulgaris*, *Epicoccum purpurascens*, *Monotospora sphaerocephala*, *Verticillium lateritium*, and *Polyactis cinerea*. The common moulds belonging to this order, which attack almost everything left in a damp state or put aside in damp weather, are too familiar to require mention here, but it may be stated that nearly all the species of every-day occurrence are unrecorded.

8. MYXOMYCETES OR MYCETOZOA

The curious organisms usually known as the Mycetozoa are with difficulty assigned to a definite position in any lineal system of classification. This arises from certain peculiarities which they exhibit during the changes of form through which they pass in the series of metamorphoses constituting their life-cycle. In certain stages they show affinities with several groups of plants, by which they are linked to the vegetable kingdom, while in other phases of their life-history they present equally marked alliances with the animal world. Hence they may be described as lying on the borderland of the two great divisions of animated nature, suggesting that both these kingdoms have had a common ancestry.

So different are they in some respects from all other known forms of life, that it has recently been suggested by an eminent biologist that they should be raised to the rank of a separate kingdom.

For convenience' sake they are usually classed with the Fungi, the German author Sachs grouping them with the *Zygosporæ*, although he admits that they differ from these in certain important points.

Mode of occurrence and general appearance.—The Mycetozoa are usually found upon decayed vegetation, such as leaf heaps in the recesses of damp woods and other shady situations; and on fallen branches and rotten tree-roots, especially if overgrown with vegetation.

In addition to such situations, recent researches, dating from 1897, in Hertfordshire and the adjoining counties, have shown that old straw-heaps, such as are usually found on outlying farms, are very prolific in these organisms. These accumulations of decaying vegetation have yielded in this district several previously undescribed species and noteworthy British records. These are the two new species, *Physarum straminipes* and *Didymium Trochus*; a new variety, *Physarum didermoides*, var. *lividum*; the first European record of *Fuligo ellipsospora*; and the first British record of *Badhamia ovispora*.

A brief description of the Mycetozoa in the fruiting-stage will be helpful to those who may wish to observe them in the field. A common form, *Didymium difforme*, which often occurs in heaps of leaves or straw, presents the appearance of minute spherical white beads on short stalks.

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These are sometimes so abundant that the straw looks as though whitened with hoar-frost. Another species, *Fuligo septica*, known also as 'flowers of tan,' may occasionally be seen on the surface of straw-heaps. It appears as a yellowish white mass, and is sometimes so large as to be compared by casual observers with cauliflower heads.

In some species the immature condition is different in colour from that of the mature. This is notably the case with some species of the genus *Comatricha*, which, upon emerging from the substratum, appear like minute white beads on hair-like black stalks. In a day or two the sporangia turn to a dusky brown. Others again, as *Lamproderma*, look like minute black beads, which glisten as though covered with varnish. These when mature exhibit iridescent hues.

A very generally distributed species (*Lycogala miniatum*), frequently seen in woods in early spring, finds a congenial habitat in decayed logs of wood. When immature it is of a lovely pink or crimson hue, which gradually changes to light brown on arriving at maturity. The heads are sessile, and range from the size of a pea to that of a hazel nut. Another form, known as *Trichia persimilis*, presents the appearance of a patch of sessile white beads, which when ripe change to a bright yellow.

Their metamorphoses.—In what may be regarded as the initial stage of their life-cycle the Mycetozoa exist as minute spores, usually spherical, each of which contains a speck of protoplasm; or rather they should be regarded as minute particles of protoplasm which have invested themselves with a covering of cellulose, usually ornamented with patterns which are constant according to the species. These spores are readily distributed by the wind, and when they fall in favourable situations the spore-covering is thrown off and the contained protoplasm assumes an amœboid form.

Eventually a number of these unite and form a plasmodium. This may consist of only a minute expansion, or it may extend to a foot or more in length, presenting the appearance of a network of motile streaming veins. The colour of this varies in different species and genera. It may be yellow as in *Badhamia*, grey or white as in *Physarum*, pink or rose as in *Lycogala*, and slate-colour as in *Cribraria argillacea*. The plasmodium may be regarded as the feeding-stage of the organism, and is so undifferentiated in structure that any portion of it may become a foot, or a mouth, or a stomach, according to requirements. It presents also the phenomenon of circulation, which is of a most singular character. When examined microscopically, the granular contents are seen to flow in one direction for about a minute and a half; then follows a brief pause, after which the streaming motion is set up in the opposite direction; and this alternate ebb and flow is continued until the organism undergoes a further change of form. The plasmodium-stage may be regarded as that in which conjugation takes place, as it is followed by the formation of spore-bearing organs.

After continuing in this plastic state for an indefinite period, which may be for weeks or months, the plasmodium contracts itself into com-

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pact masses, which may be separate sporangia, or the whole protoplasmic contents may coalesce and form an æthaliium. But whether the fruiting-stage consists of sporangia or æthalia, these contain an immense number of spores which are eventually distributed by the wind, and when they are borne to favourable situations their life-cycle recommences.

When in the motile stages, whether as amœboid cells or as plasmodia, should the climatal conditions become unfavourable, they have the power of encysting themselves and existing apparently in a state of suspended animation. When their environment is again favourable they resume their plastic state and motile condition.

In illustration of the advantage to the organism of this singular power the following facts are presented.

In the early part of the year 1895 occurred a severe frost of many weeks' duration. Just prior to its commencement the writer observed a large mass of plasmodium of *Badhamia utricularis* on a decayed log in Birchin Grove Wood, Herts. It was then streaming in large veins, and was evidently in full vigour. Two or three days after this the frost set in, and no observations were made until its cessation. The thaw commenced on a Thursday towards the end of February, and on the following Sunday a visit was made to the spot to note the behaviour of the plasmodium. It was found that the whole mass had become encysted when the frost commenced, forming a wax-like substance, the *sclerotium*. In this condition it had withstood the excessive cold, and in the three days subsequent to the commencement of the thaw, the greater proportion had resumed its plastic condition, and was again streaming in its characteristic veins and fans. A small portion of the *sclerotium* still remained unrevived, being in the highest and driest portion of the log. A gathering of the plasmodium was made, which after a few weeks' cultivation fruited satisfactorily.

As a further illustration of the tenacity of life of the *sclerotium*-stage of *Badhamia utricularis*, the writer may mention that he has a lantern-slide of this species which was gathered in the plasmodium condition in a wood in Herts in November, 1894, and was allowed to encyst itself and then kept as *sclerotium* till November, 1896. After these two years of suspended animation it was easily revived by moisture and moderate warmth, when it spread itself out into its characteristic forms in search of food. It was then rapidly dried by artificial heat, so that its usual appearance in the creeping-stage should be rendered permanent.

Some plasmodium of *Badhamia nitens* was collected in a wood in Caddington, Herts, at Christmas, 1892. It was attached to a fungus (*Irpex*) which was growing on a decayed branch of oak. The whole gathering—wood, fungus, mycetozoon—was frozen hard when obtained. It rapidly thawed within doors and exhibited movements for several days. A short time afterwards it was allowed to dry up, when it assumed the *sclerotium* condition. In this state it existed, looking like a piece of sealing-wax, until the spring of 1894. It was then placed in tepid water, and during

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the succeeding night it exhibited unusual activity. It continued in a more or less motile state for several weeks, when it matured and formed its sporangia.

Some species pass the plasmodium-stage in the interior of decayed tree-roots or logs, and do not make their appearance till they emerge for the purpose of forming their fruits. Hence very little is known of their habits in the motile condition. On one occasion, in a wood near Harpenden, Herts, a decayed tree-root, quite a foot in diameter, was being examined for these organisms. In the centre the woody fibres were found to be saturated with plasmodium which when matured proved to be that of *Hemiarcyria clavata*.

The sequence of changes in the life-cycle of the Mycetozoa is as follows: *spore*—the distributive stage; *myxamæba* and *plasmodium*—the motile and assimilating stages; *sporangium*—the fruiting stage, the spores of which, when distributed, enable the cycle to recommence.

Classification.—The grouping and arrangement of the genera and species are based upon the characters and contents of the mature sporangia. The two principal divisions are those in which (a) the spores are developed on the *outside* of the sporophores, and (b) those in which the spores are developed *inside* the sporangia.

In the first division there is only one genus known, but in the second the genera are numerous. These are further divided according to the colours of the spores, the first cohort including those in which they are violet or violet-brown, and the second those in which the spores are variously coloured but never violet.

The further subdivisions are based upon the presence or absence of lime in the walls of the sporangia, and also upon the characters of the capillitium when this is present.

Distribution in Herts.—As wind is the principal agent in the dispersal of the spores of the Mycetozoa, it is obvious that most of the species must have a wide geographical distribution. This renders it highly improbable that any form would be confined to so limited an area as an English county, or even to the British Islands.

The subjoined list of those which have been recorded for Hertfordshire, though by no means exhaustive, will give a fair idea of what forms the county would furnish to a local investigator.

There are a few species deserving special notice, amongst which is *Badhamia nitens*. This until a few years ago had not been recorded for any locality outside England. It is now known to occur in Ceylon and Antigua. Hertfordshire furnished the first-known British record of the plasmodium-stage of this species.

The first two British localities for which *Physarum citrinum* was recorded are Caddington and Welwyn, both in Herts. It has recently been found in Scotland, and is known to occur also in Germany and Venezuela.

Badhamia ovispora has recently (1900) been found in Herts, the only previous British records being for the adjoining counties of Beds and Bucks.

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The following Mycetozoa have been found in Hertfordshire¹—

- | | |
|---|---|
| <p> <i>Ceratiomyxa mucida</i>, <i>Schroeter</i> <i>Badhamia hyalina</i>, <i>Berk.</i> — <i>utricularis</i>, <i>Berk.</i> — <i>nitens</i>, <i>Berk.</i> — <i>ovispora</i>, <i>Racib.</i> — <i>panicea</i>, <i>Rost.</i> <i>Physarum citrinum</i>, <i>Schum.</i> — <i>viride</i>, <i>Pers.</i> — <i>nutans</i>, <i>Pers.</i> <i>var. leucophæum</i> <i>var. violascens</i>, <i>Rost.</i> — <i>calidris</i>, <i>Lister</i> — <i>compressum</i>, <i>Alb. & Schw.</i> — <i>straminipes</i>, <i>Lister</i> — <i>didermoides</i>, <i>Rost.</i> — <i>bivalve</i>, <i>Pers.</i> — <i>Diderma</i>, <i>Rost.</i> <i>Fuligo septica</i>, <i>Gmel.</i> <i>Craterium pedunculatum</i>, <i>Trent.</i> — <i>leucocephalum</i>, <i>Ditm.</i> <i>Leocarpus vernicosus</i>, <i>Link</i> <i>Chondrioderma spumaroides</i>, <i>Rost.</i> — <i>testaceum</i>, <i>Rost.</i> — <i>Michelii</i>, <i>Rost.</i> — <i>reticulatum</i>, <i>Rost.</i> — <i>radiatum</i>, <i>Rost.</i> <i>Didymium difforme</i>, <i>Duby</i> — <i>Clavus</i>, <i>Rost.</i> — <i>nigripes</i>, <i>Fries</i> — <i>effusum</i>, <i>Link</i> <i>Spumaria alba</i>, <i>DC.</i> <i>Stemonitis fusca</i>, <i>Roth</i> </p> | <p> <i>Stemonitis ferruginea</i>, <i>Ehrenb.</i> <i>Comatricha obtusata</i>, <i>Preuss.</i> — <i>typhoides</i>, <i>Rost.</i> — <i>Persoonii</i>, <i>Rost.</i> <i>Enerthenema elegans</i>, <i>Bowm.</i> <i>Lamproderma irideum</i>, <i>Mass.</i> <i>Cribraria argillacea</i>, <i>Pers.</i> <i>Dictydium umbilicatum</i>, <i>Schrad.</i> <i>Tubulina fragiformis</i>, <i>Pers.</i> <i>Enteridium olivaceum</i>, <i>Ehrenb.</i> <i>Reticularia Lycoperdon</i>, <i>Bull.</i> <i>Trichia affinis</i>, <i>de Bary</i> — <i>persimilis</i>, <i>Karst.</i> — <i>scabra</i>, <i>Rost.</i> — <i>varia</i>, <i>Pers.</i> — <i>contorta</i>, <i>Rost.</i> <i>var. inconspicua</i> — <i>fallax</i>, <i>Pers.</i> — <i>Botrytis</i>, <i>Pers.</i> <i>var. munda</i>, <i>Lister</i> <i>Hemitrichia intorta</i>, <i>Lister</i> — <i>clavata</i>, <i>Rost.</i> <i>Arcyria albida</i>, <i>Pers.</i> <i>var. pomiformis</i> — <i>punicea</i>, <i>Pers.</i> — <i>incarnata</i>, <i>Pers.</i> — <i>flava</i>, <i>Pers.</i> <i>Perichæna depressa</i>, <i>Libert.</i> — <i>populina</i>, <i>Fries</i> — <i>variabilis</i>, <i>Rost.</i> <i>Lycogala miniatum</i>, <i>Pers.</i> </p> |
|---|---|

¹ The nomenclature and arrangement are those of the *Monograph of the Mycetozoa*, by Arthur Lister, F.L.S. (1894).

ZOOLOGY

MOLLUSCS

The number of species of Mollusca recorded for Hertfordshire is 96. There being 139 known for the whole of the British Islands, this is a fair average, and the number will doubtless be increased when more attention has been paid to the slug fauna, several well-known forms that should be met with not being yet recorded.

The Roman snail (*Helix pomatia*), a very local species, occurs in several localities, in some of which it is probably indigenous; whilst into others it may have been introduced. It certainly lived in Britain in pre-Roman times.

The pretty little *Vertigo moulinsiana* is at present found in the living state in but a few isolated localities; two of these however are within the Hertfordshire area.

The chief sources of information on the Mollusca of Hertfordshire are three papers read before the Hertfordshire Natural History Society in 1884,¹ lists of species collected at field meetings of this Society and published in the *Transactions*, and a list of species collected in the neighbourhood of Hertford by members of the Haileybury Natural History Society.² Specimens of nearly all the species here recorded may be seen in the County Museum at St. Albans and in the Haileybury College Museum.

A. GASTROPODA

I. PULMONATA

a. STYLOMMATOPHORA

Testacella scutulum, Sby. Hemel Hempstead
Limax maximus, Linn.
 — *flavus*, Linn.
 — *arborum*, Bouch.-Chant.
Agriolimax agrestis (Linn.)
 — *lævis* (Müll.). Ware
Amalia sowerbii (Fér.). Verulam Hills, St. Albans; Ware
Vitrina pellucida (Müll.)
Vitrea crystallina (Müll.)
 — *alliaria* (Miller). Hitchin; Gallows Hill, Haileybury

Vitrea glabra (Brit. Auct.)
 — *cellaria* (Müll.)
 — *nitidula* (Drap.)
 — *pura* (Ald.)
 — *radiatula* (Ald.). Hitchin; Berry Wood, Aldenham; Ware
 — *nitida* (Müll.). Hitchin; Ware
 — *fulva* (Müll.)
Arion ater (Linn.)
 — *bortensis*, Fér.
Punctum pygmæum (Drap.). Hitchin; Hoddesdon Fields
Pyramidula rupestris (Drap.). Near Bushey Lodge, Watford
 — *rotundata* (Müll.)

¹ Roebuck and Taylor, 'The Recorded Occurrences of Land and Freshwater Mollusca in Hertfordshire,' *Trans. Herts Nat. Hist. Soc.*, vol. iii. p. 10; Hopkinson, 'Remarks on the Land Mollusca,' *op. cit.* p. 17; and 'List of Land and Freshwater Mollusca observed in Hertfordshire,' *op. cit.* p. 29.

² *Fauna and Flora of Haileybury*, part i. (1888).

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Helicella virgata (Da C.)
 — *itala* (Linn.)
 — *caperata* (Mont.)
 — *cantiana* (Mont.)
Hygromia fusca (Mont.). Gallows Hill, Haileybury
 — *granulata* (Ald.)
 — *hispida* (Linn.)
 — *rufescens* (Penn.)
Acanthinula aculeata (Müll.). Hitchin; Swiss Cottage, Cassiobury Park; Hoddesdon Fields
Vallonia pulchella (Müll.)
Helicigona lapicida (Linn.). Hitchin; Tring; Sandridge; Gallows Hill, Haileybury
 — *arbutorum* (Linn.)
Helix aspersa, Müll.
 — *pomatia*, Linn. Hitchin; St. Albans; Harpenden; Marford Bridge and Waterend, Wheathampstead; Gallows Hill, Haileybury
 — *nemoralis*, Linn.
 — *hortensis*, Müll.
Buliminus montanus (Drap.). Hitchin
 — *obscurus* (Müll.)
Cochlicopa lubrica (Müll.)
Azeca tridens (Pult.). Hitchin; Sandridge
Cæcilianella acicula (Müll.)
Pupa secale, Drap. Beech woods at Aldbury, Tring
 — *cylindræa* (Da C.)
 — *muscorum* (Linn.)
Sphyradium edentulum (Drap.). Swiss Cottage Woods, Cassiobury Park
Vertigo anti-vertigo (Drap.). Hitchin
 — *pygmæa* (Drap.). Hitchin; Ware; Rye House
 — *mouliniana* (Dup.). Near Hitchin; near Broxbourne
Balea perversa (Linn.). Hitchin
Clausilia laminata (Mont.)
 — *bidentata* (Ström.)
 — *biplicata* (Mont.)
 — *rolphii*, Gray. Gallows Hill, Haileybury

Succinea putris (Linn.). In addition to the type a variety, which has been described as a separate species, under the name of *S. virescens*, has been found at St. Albans.
 — *elegans*, Risso. Hemel Hempstead; Gorbambury, St. Albans; Ware

b. BASOMMATOPHORA

Carychium minimum, Müll. Hitchin; Swiss Cottage, Cassiobury Park; Haileybury
Anychus fluviatilis, Müll.
Velletia lacustris (Linn.). Sopwell, St. Albans; Hoddesdon Fields
Limnæa auricularia (Linn.)
 — *pereger* (Müll.)
 — *palustris* (Müll.)
 — *truncatula* (Müll.)
 — *stagnalis* (Linn.)
Planorbis corneus (Linn.)
 — *albus*, Müll.
 — *glaber*, Jeff. St. Margaret's
 — *nautilus* (Linn.)
 — *carinatus*, Müll.
 — *marginatus*, Drap.
 — *vortex* (Linn.)
 — *spirorbis*, Müll.
 — *contortus* (Linn.)
 — *fontanus* (Lightf.)
 — *lineatus* (Walker). Ware
Physa fontinalis (Linn.)
 — *hypnorum* (Linn.). Hitchin

II. PROSOBRANCHIATA

Bythinia tentaculata (Linn.)
 — *leachii* (Shepp.). Hitchin; Ware
Vivipara vivipara (Linn.)
Vakata piscinalis (Müll.)
 — *cristata*, Müll. Hitchin; Ware
Pomatias elegans (Müll.). Hitchin; Ashridge Park, Tring; Gorbambury Park, St. Albans; near Wheathampstead; Bocket Park, Welwyn; Gallows Hill, Haileybury
Neritina fluviatilis (Linn.). River Lea

B. PELECYPODA

Dreissensia polymorpha (Pall.)
Unio pictorum (Linn.)
Anodonta cygnæa (Linn.)
Sphærium rivicola (Leach). Rickmansworth; River Lea
 — *corneum* (Linn.)
 — *lacustre* (Müll.). Hitchin; Rickmansworth; Ware

Pisidium amnicum (Müll.)
 — *pusillum* (Gmel.). Hitchin; Watford; Ware
 — *nitidum*, Jenyns. Watford; Ware
 — *fontinale* (Drap.). Sopwell, St. Albans; Rickmansworth; Ware
 — *miliu* (Held.)

INSECTS

With the exception of the Lepidoptera, the Coleoptera and a small section of the Diptera, no attempt appears to have been made to compile systematic lists of the insects of Hertfordshire. In the earlier decades of the nineteenth century James Francis Stephens, a clerk in the Admiralty, and in 1837 president of the Entomological Society, devoted his leisure hours to the study of natural history, and in the formation of his celebrated collections of insects he made frequent visits to many localities within a moderate distance of the metropolis. The neighbourhood of Hertford appears to have been one of his favourite hunting grounds, and in his *Illustrations of British Entomology* he refers to the capture of specimens belonging to a good many species of Lepidoptera, Coleoptera, Orthoptera, Neuroptera, Trichoptera and Heteroptera in that part of the county. These records have now been brought together and, so far as the last four of the above named Orders are concerned, form the only local lists we possess. For some years past the Lepidoptera of the county have been carefully catalogued on behalf of the Hertfordshire Natural History Society, and the annual reports of the recorders have been printed in the Society's *Transactions*.

Economic entomology has received a considerable amount of attention, and in connection with this branch of science the life-long investigations of Miss Eleanor A. Ormerod, LL.D., F.E.S., Torrington House, St. Albans, must be prominently mentioned. The many useful works which have issued from her pen have done much to increase our knowledge of the life history of insect pests and of the remedies which may be applied to check their ravages.

At Tring is situated the Rothschild Museum of Natural History, where a staff of skilled entomologists is constantly engaged upon the study of both British and exotic insects.

COLEOPTERA

The Coleoptera of Hertfordshire have at present been somewhat inadequately studied, and much work remains to be done in many districts before anything like a complete knowledge is obtained of the local distribution of insects belonging to this Order. The subjoined catalogue consists very largely of species which have been noticed along the western side of the county in a district extending from Watford to

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Tring, and which is situated almost wholly upon the Cretaceous beds, and this formation being characteristic of a large portion of Hertfordshire, the species enumerated may, as far as they go, be considered as representative to a certain extent of the county generally. In many localities the chalk is overlaid by deposits belonging to the Eocene and Quaternary periods, and there is a corresponding alteration in the character of the flora. Not much is known of the Coleoptera of these districts, but they may reasonably be expected to produce some species not to be found upon the outcrop of the Cretaceous beds. Where outliers of the Woolwich and Reading beds occupy extensive areas they effect a material change in the character of the soil, and an increased number of species of Coleoptera may be looked for, especially if the outlier be covered with woodland. Upon the chalk we have occurring a considerable number of the species peculiar to that formation, and it will be found that a very close analogy exists between the fauna of the Chiltern Hills district and that of similar districts in the counties of Kent and Surrey. The Middle Chalk which seems so specially favourable to the growth of several of our rare plants¹ is also apparently the special haunt of many of the rarer chalk-loving beetles. Here there always seems to be a greater variety of species, and two members of the genus *Apion*, *A. atomarium* and *A. waltoni*, I have not yet noticed on any of the other divisions of the formation. Possibly other observers may find these two species less particular in this respect. The beech woods which flourish in and are such a notable feature of the chalky districts, harbour many characteristic species, principally sub-cortical ones, the beech being very little in favour with the *Cryptocephali*, *Rhynchites* and other phytophagous genera usually to be looked for in such situations. The flora of the chalk downs and uncultivated chalky pastures includes a large number of plants which are frequented by various beetles. It is unnecessary to detail them here, as the name of the food plant upon which a species has been found to occur in the county is given in each case in the catalogue with the locality. Even the cultivated fields in the chalky districts are often well adapted to produce an abundance of beetle life, growing as they do crops of sainfoin, lucerne and clover or cereal crops much overrun by charlock (*Brassica sinapis*), either kind of vegetation being capable of supporting many species of the weevil tribe and *Halticidæ*, and for which there is usually abundant undisturbed shelter during winter in the close-growing turf and moss of the adjacent chalk downs and hedgerows.

The aquatic Coleoptera are but poorly represented at present in the county list. This is partially due no doubt to the fact that I have not myself collected them quite so carefully as some of the other groups, but it must also be borne in mind that there are no extensive fen or bog lands within the county, so that probably further and more complete search will not very largely augment the number.

Upwards of fifty of the species appearing in the catalogue are not at present known to occur further north. Many of these are chalk-fre-

¹ *Flora of Hertfordshire*, pref. p. xiii.

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quencing insects, and all are easily recognizable, and therefore not likely to have been overlooked if they existed elsewhere north of the county. Five species which have a more or less boreal distribution have been observed; they are: *Gyrophæna manca*, *Corymbites cupreus*, *C. æneus*, *Phyllobius viridicollis* and *Barynotus schonherri*. The occurrence of *Corymbites cupreus* may have been accidental, as but one specimen was picked up in the churchyard at Tring some years ago. When the distribution of our native Coleoptera has been more fully investigated, it will probably be found that that portion of the Chiltern range situated in the county constitutes an interesting natural limit, roughly speaking, to the advance northward of several of our British beetles. Altogether 1,542 species have been recorded for Hertfordshire, but I am confident that this figure represents very incompletely the total number likely to be found. Some proof of the truth of this statement is afforded by the fact that nearly 100 additional species have been noticed by myself in Buckinghamshire within three or four miles of the Herts border, and in localities which have their exact counterpart in Hertfordshire. My thanks are due to the following gentlemen who have kindly given assistance: The Rev. Canon Fowler, M.A., F.L.S., Rev. Theodore Wood, F.E.S., Mr. G. A. Lewcock, Mr. E. A. Newbery, and Mr. A. Piffard, all of whom have furnished lists of captures made in the county. Canon Fowler has collated a number of records, chiefly from Stephens' works. The Rev. Theodore Wood's list consists entirely of species noticed in the vicinity of Baldock, where he took *Barynotus schonherri*, the capture of which so far south is noteworthy. Mr. Lewcock's captures were made during an excursion to Bricket Wood and Watford; he reports some scarce insects from both places. Mr. Newbery has made but slight entomological acquaintance with the county, but still several species stand in the list on his authority alone. Mr. Piffard has collected at several Hertfordshire localities, but principally in the neighbourhood of Boxmoor; to him belongs the credit of having made an addition to our British list in the discovery of *Orochares angustata* at Leverstock Green. He has contributed many other important records, among them being several species for which only two or three British localities were known previously.

Of the records to be found in Stephens' *Manual* which apply to Hertfordshire, only those have been quoted about which there seems to be little or no doubt as to the identity of the species. Possibly some records of importance may have been omitted from this source, but considering the confused state of the nomenclature of Stephens' work, it seems best to err on the side of overcarefulness. Where no name is attached to the localities, the record must be understood to be my own. The nomenclature of Sharp and Fowler's *Catalogue of British Coleoptera* has been adopted, except in a very few cases where recent research has necessitated an alteration.

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LIST OF COLEOPTERA OBSERVED IN HERTFORDSHIRE

CICINDELIDÆ

Cicindela campestris, L. *Hastoe*, very scarce, in *Brown's Lane*

CARABIDÆ

CYCHRINA

Cychnus rostratus, L. *Bovingdon*, in a gravel pit

CARABINA

Carabus catenulatus, Scop. *Tring*
 — *nemoralis*, Müll. } *Tring*; *New Barnet* (Newbery)
 — *violaceus*, L. }
 — *monilis*, F. }
 — *granulatus*, L. *New Barnet* (Newbery)

NOTIOPHILINA

Notiophilus biguttatus, F. *Tring*
 — *aquaticus*, L. } *Tring*
 — *palustris*, Duft. }
 — *rufipes*, Curt. *Wigginton*, rare, at *Gryme's Dyke*

NEBRIINA

Leistus spinibarbis, F. } *Tring*
 — *fulvibarbis*, Dej. }
 — *ferrugineus*, L. *Tring*, occasionally beaten out of hedges
Nebria brevicollis, F. *Tring*; *New Barnet* (Newbery)

ELAPHRINA

Elaphrus riparius, L. *Wilstone*, not uncommon by the reservoir
 — *cupreus*, Duft. *Elstree* (Piffard); *Hertford* (Stephens)

LORICERINA

Loricera pilicornis, F. *Tring*; *New Barnet* (Newbery)

SCARITINA

Clivina fossor, L. *Little Tring* and *Wilstone*
 — *collaris*, Herbst. *Little Tring*; *New Barnet* (Newbery)
Dyschirius æneus, Dej. *Wilstone*, rather common at the reservoir

PANAGÆINA

Panagæus quadripustulatus, Stm. *Hertford*, 'taken in profusion under stones and clods of earth' (Dawson, *Monograph of British Geodephaga*)

Badister bipustulatus, F. *Tring*
 — *sodalis*, Duft. *Tring*, often found in dead leaves and moss, on the hills
 — *peltatus*, Panz. *Tring*, one specimen only

LICININA

Licinus depressus, Payk. *Tring*, very rare, on chalky ground under stones; near *Payne's End*. In March

CHLÆNIINA

Chlænius vestitus, Payk. *Little Tring*, very scarce, under stones
 — *nigricornis*, F. *Elstree* (Piffard)

STENOLOPHINA

Acupalpus dorsalis, F. *Wilstone*, under dead reeds at the reservoir
 — *exiguus*, Dej. *Wigginton Common*, plentiful in moss growing on a pond bank; *Chipperfield* (Piffard)
 — *brunnipes*, Sturm. Near *Hertford*¹ (Stephens)
 — *meridianus*, L. *Tring*
 — *consputus*, Duft. *Wilstone*, rare, under dead reeds by the reservoir
Bradycellus placidus, Gyll. *Wilstone*, scarce, by the reservoir
 — *distinctus*, Dej. } *Tring*
 — *verbasci*, Duft. }
 — *harpalinus*, Dej. }
 — *similis*, Dej. *Wigginton Common*, very rare

HARPALINA

Harpalus punctatulus, Duft.² *Hertford* (Stephens)
 — *azureus*, F. *Rossway*, near *Wigginton*, one example running in roadway; *Hertford* (Stephens)
 — *rupicola*, Sturm. *Tring*, scarce, on the hills
 — *puncticollis*, Payk. *Tring*
 — *rufibarbis*, F. *Tring*, rare
 — *ruficornis*, F. } *Tring*
 — *æneus*, F. }
 — *rubripes*, Duft. }
 — *latus*, L. *Aldbury* and *Tring*

PTEROSTICHINA

Stomis pumicatus, Panz. *Tring*; *New Barnet* (Newbery)
Platyderus ruficollis, Marsh. *Felden* (Piffard)
Pterostichus cupreus, L. } *Tring*
 — *versicolor*, Sturm. }
 — *lepidus*, F. *Hertford* (Dawson, *Monograph of British Geodephaga*)
 — *madidus*, F. } *Tring*
 — *niger*, Schall. }
 — *vulgaris*, L. }

¹ This locality is not quoted by Fowler in his work on *British Coleoptera*, possibly on account of uncertainty as to the identity of Stephens' specimens.

² *Harpalus rotundicollis*, *H. punctatulus*, and *H. azureus* are all moderately common insects on the sheltered southern slopes of the Chilterns, about Chesham in Bucks; but I have searched the hills at Tring, only a few miles distant, most assiduously for these members of the Ophonus group without any success; this fact is all the more striking, as there is a large area of uncultivated chalky ground at Tring, where they might well be expected to occur; their absence must probably be attributed to climatal differences.

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PTEROSTICHINA (continued)

- Pterostichus anthracinus*, Ill. *Wilstone*, very rare, in refuse by the reservoir
 — *nigrita*, F. *Wilstone* and *Little Tring*
 — *gracilis*, Dej. *Little Tring*, rare, as a rule, under stones by the reservoir
 — *minor*, Gyll. *Tring*
 — *strenuus*, Panz. *Tring*; *Hertford* (Dawson, *Monograph of British Geodephaga*); *New Barnet* (Newbery)
 — *diligens*, Sturm. *Tring*; *Hertford* (Stephens)
 — *striola*, F. *Tring*, rare

AMARINA

- Amara apricaria*, Sturm. *Tring*
 — *aulica*, Panz. *Tring*, sometimes seen on flower-heads
 — *bifrons*, Gyll. *Tring*
 — *ovata*, F. *Tring*, rare, on the hills
 — *acuminata*, Payk. *Tring*
 — *similata*, Gyll. *Wigginton*
 — *spretta*, Dej. *Hertford* (Dawson, *Monograph of British Geodephaga*)
 — *familiaris*, Duft. }
 — *communis*, Panz. } *Tring*
 — *continua*, Thoms. }
 — *plebeia*, Gyll. }
Calathus cisteloides, Panz. }
 — *flavipes*, Fourc. }
 — *melanocephalus*, L. *Tring*, by no means common in the district
Pristonychus terricola, Herbst. Near *Bovingdon*, in hedgerow; *New Barnet* (Newbery)

ANCHOMENINA

- Anchomenus angusticollis*, F. *Wilstone*, scarce, at the reservoir
 — *dorsalis*, Müll. }
 — *albipes*, F. } *Tring*
 — *oblongus*, Sturm. Near *Flaunden*
 — *marginatus*, L. *Little Tring* and *Wilstone*, under stones by the reservoirs at these two places
 — *sexpunctatus*, L. *Hertford* (Dawson, *Monograph of British Geodephaga*)
 — *parumpunctatus*, F. *Tring*; *New Barnet* (Newbery)
 — *viduus*, Panz. *Hastoe*, rare, in Brown's Lane
 — *micans*, Nic. }
 — *fuliginosus*, Panz. } *Wilstone*, at the reservoir
 — *gracilis*, Gyll. }
 — *piceus*, L. Near *Bovingdon*
 — *thoreyi*, Dej. *Tring* (?) There may be a doubt about the occurrence of this species at *Tring*, but Mr. J. W. Shipp told me he found it at *Tring* reservoirs

Olisthopus rotundatus, Payk. *Tring*

BEMBIDIINA

- Tachys bistriatus*, Duft. *Tring*
Bembidium obtusum, Sturm. *Tring*; *New Barnet* (Newbery)
 — *guttula*, F. *Tring*
 — *mannerheimi*, Sahl. *Wigginton Common*, rare
 — *biguttatum*, F. *Tring*; *New Barnet* (Newbery)
 — *riparium*, Ol. *New Barnet* (Newbery)
 — *æneum*, Germ. *Wilstone*; *Bricket Wood* (Lewcock)
 — *fumigatum*, Duft. *Wilstone*, sometimes not uncommon under reeds by the reservoir, in spring
 — *assimile*, Gyll. *Wilstone*, fairly common with the preceding
 — *clarki*, Daws. *Wilstone* and *Little Tring*
 — *articulatum*, Panz. *Tring* reservoirs; *Aldbury*, one in dead leaves in a dry chalky situation, and at the end of a dry summer; *New Barnet* (Newbery)
 — *doris*, Panz. *Wilstone*, rare, by the reservoir
 — *gilvipes*, Sturm. *Wigginton Common*, scarce
 — *lampros*, Herbst. *Tring*
 — *decorum*, Panz. *Little Tring*, rare
 — *nitidulum*, Marsh. *Tring*
 — *quadriguttatum*, F. *Tring*; *Bricket Wood* (Lewcock)
 — *quadrimaculatum*, Gyll. *Tring*; *New Barnet* (Newbery)
 — *femoratum*, Sturm. *Wilstone*, by the reservoir
 — *littorale*, Ol. *Tring*
 — *flammulatum*, Clairv. *Little Tring*
Tachypus flavipes, L. *Aldbury*

TRECHINA

- Trechus discus*, F. *Hastoe*, in Brown's Lane, and *Wilstone*, very rare
 — *minutus*, F. *Tring*
Patrobus excavatus, Payk. *Little Tring*

LEBIINA

- Lebia chlorocephala*, Hoff. *Tring*; *Felden* (Piffard); *Hertford* (Stephens)
Demetrias atricapillus, L. *Tring*
Dromius linearis, Ol. }
 — *meridionalis*, Dej. } *Tring*; *New Barnet* (Newbery)
 — *quadrimaculatus*, L. }
 — *quadrinotatus*, Panz. *Aldbury* and *Tring*, in Grove Park, under holly bark
 — *melanocephalus*, Dej. }
Blechrus maurus, Sturm. } *Tring*
Metabletus foveola, Gyll. }

HALIPLIDÆ

- Haliplus obliquus*, F. *Tring*, plentiful in one pond

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- Haliphus mucronatus*, Steph. *Hertford* (Stephens)
 — *flavicollis*, Sturm. *Wilstone*, in the reservoir
 — *fulvus*, F. *Wigginton*
 — *variegatus*, Sturm. *Wilstone*, rare, in a stream
 — *cinereus*, Aubé. *Miswell*, in the pond
 — *ruficollis*, De G. *Tring*
 — *fluvialis*, Aubé. *Wilstone*
 — *lineatocollis*, Marsh. Near *Flaunden*, rare
Cnemidotus impressus, F. *Hertford* (Stephens)

DYTISCIDÆ

NOTERINA

- Noterus clavicornis*, De G. *Hastoe*
Laccophilus interruptus, Panz. } *Tring*
 — *obscurus*, Panz.

HYDROPORINA

- Hyphydrus ovatus*, L. *Hastoe*
Cælambus versicolor, Schall. *Wilstone*, scarce, in the reservoir
 — *inæqualis*, F. *Tring*
 — *parallelogrammus*, Ahr. *Wilstone*, in the reservoir

- Deronectes depressus*, F. *Wilstone*
 — *12-pustulatus*, F. *Little Tring*, in the canal

- Hydroporus lepidus*, Ol. *Tring*
 — *dorsalis*, F. *Wilstone*, in the reservoir
 — *lineatus*, F. *Hastoe* and *Wigginton*
 — *scalesianus*, Steph. *Boxmoor* (Piffard).

It is a great pleasure to be able to record this species for the county, as it seems so very restricted in its distribution ¹

- *angustatus*, Sturm. *Wigginton*
 — *gyllenhali*, Schiöd. } *Tring*
 — *palustris*, L. }
 — *erythrocephalus*, L. }
 — *memnonius*, Nic. *Asbridge Park* and near *Flaunden*
 — *nigrita*, F. *Wigginton Common*
 — *discretus*, Fairm. *Wilstone*, in the reservoir
 — *pubescens*, Gyll. *Wigginton*
 — *planus*, F. *Tring*
 — *marginatus*, Duft. *Tring*, one specimen only of this rare insect taken in 1893; *Hemel Hempstead* (Piffard)

DYTISCINA

- Agabus guttatus*, Payk. *Wilstone*, in the reservoir

¹ Originally taken by Mr. Scales in Norfolk, but the locality has been lost; it appears to be only found now in Askham Bog near York (Fowler, *British Coleoptera*, vol. i.).

DYTISCINA (continued)

- Agabus didymus*, Ol. *Wigginton* and *Little Tring*
 — *nebulosus*, Forst. *Little Tring*, in the reservoir
 — *sturmii*, Gyll. *Wigginton*
 — *chalconotus*, Panz. *Tring*, in the reservoirs
 — *bipustulatus*, L. *Tring*
Platambus maculatus, L. *Wilstone*, scarce, in a stream
Ilybius fuliginosus, F. *Wigginton Common*
 — *fenestratus*, F. *Wigginton Common*
 — *ater*, De G. *Miswell* and *Wigginton Common*
 — *obscurus*, Marsh. *Wigginton Common*
Rhantus bistriatus, Berg. *Miswell*, in the pond
Colymbetes fuscus, L. *Wilstone*, in the reservoir
Dytiscus punctulatus, F. Near *Totternhoe* (Piffard)¹
 — *marginalis*, L. *Hastoe*
Acilius sulcatus, L. *Wigginton Common* and *Wilstone*

GYRINIDÆ

- Gyrinus natator*, Scop. *Tring*

HYDROPHILIDÆ

- Hydrobius fuscipes*, L. *Tring*
Anacæna globulus, Payk. *Little Tring* and *Wilstone*
 — *limbata*, F. *Wilstone*
Philhydrus testaceus, F. *Wilstone*, rare, in the reservoir
 — *coarctatus*, Gredl. *Wigginton*
Cymbiodyta ovalis, Thoms. *Wilstone*, scarce, in the reservoir
Helochares lividus, Forst. } *Tring*
Laccobius sinuatus, Mots. }
 — *bipunctatus*, F. *Wilstone*
Limnebius truncatellus, Thoms. *Tring*
 — *papposus*, Muls. *Wigginton*
 — *nitidus*, Marsh. *Tring*, one specimen floating on a water butt in garden

HELOPHORINA

- Helophorus rugosus*, Ol. *Wilstone*, not uncommon in ditches
 — *nubilus*, F. *Tring*. This insect may often be found in numbers at the roots of grass, etc., on the hills
 — *æneipennis*, Thoms. } *Tring*
 — *brevipalpis*, Bedel. }
Hydrochus angustatus, Germ. *Wigginton Common*; *Hertford* (Stephens)

¹ Mr. Piffard has some doubts as to whether this capture was really made within the county boundary.

INSECTS

HELOPHORINA (*continued*)

- Octhebius pygmæus*, F. *Wilstone*, common, in the reservoir
 — *rufimarginatus*, Steph. *Puttenham*, in a ditch
Hydræna testacea, Curt. *Hastoe*, once found in numbers in dead leaves at the bottom of an empty pond in Brown's Lane
 — *riparia*, Kug. *Tring*
 — *nigrita*, Germ. *Puttenham* and *Wilstone*

SPHÆRIDIINA

- Cyclonotum orbiculare*, F. } *Tring*
Sphæridium scarabæoides, F. }
 — *bipustulatum*, F. }
Cercyon hæmorrhous, Gyll. *Wigginton*, in refuse on a pond bank
 — *hæmorrhoidalis*, Herbst. *Tring*
 — *obsoletus*, Gyll. *Tring*; *Hertford* (Stephens)
 — *aquaticus*, Muls. *Wilstone*, scarce, under refuse by the reservoir
 — *flavipes*, F. *Tring*; *New Barnet* (Newbery)
 — *lateralis*, Marsh. }
 — *melanocephalus*, L. } *Tring*
 — *unipunctatus*, L. }
 — *quisquilius*, L. }
 — *pygmæus*, Ill. *Miswell*
 — *analis*, Payk. *Tring*; *New Barnet* (Newbery)
 — *lugubris*, Payk. *Wilstone*, in moss by the reservoir
 — *minutus*, Muls. *Wilstone*
Megasternum boletophagum, Marsh. *Tring*; *New Barnet* (Newbery)
Cryptopleurum atomarium, F. *Tring*

STAPHYLINIDÆ

ALEOCHARINA

- Aleochara fuscipes*, F. } *Tring*
 — *lata*, Grav. }
 — *tristis*, Grav. *Tring*, rare, one specimen beaten out of a hedge
 — *bipunctata*, Ol. *Tring*
 — *cuniculorum*, Kr. Near *Bovingdon*, found just inside rabbit burrows, a very usual haunt of the insect
 — *lanuginosa*, Grav. *Tring*, a very common species
 — *lygæa*, Kr. Near *Bovingdon*, rare, one specimen only under a dead bird
 — *succicola*, Thoms. *Tring*
 — *mœrens*, Gyll. *New Barnet* (Newbery); caught on a window
 — *nitida*, Grav. *Tring*, the commonest species of the genus

ALEOCHARINA (*continued*)

- Aleochara morion*, Grav. *Tring*
Microglossa suturalis, Sahl. *Tring*, usually considered a common species, but I have only found it rarely
 — *pulla*, Gyll. *Bovingdon*, taken on flowers, in May
Oxypoda spectabilis, Märk. *Tring*, rare as a rule, but I once found six together beneath a dead rabbit
 — *lividipennis*, Mann. } *Tring*
 — *opaca*, Grav. }
 — *alternans*, Grav. }
 — *lentula*, Er. *Tring*, rather rare, under dead reeds, at the reservoir near *Wilstone*
 — *umbrata*, Grav. *Tring*
 — *nigrina*, Wat. *Tring*, very frequently to be found in garden refuse
 — *longiuscula*, Er. } *Tring*
 — *hæmorrhœa*, Mann. }
 — *amœna*, Fairm. *Tring*, two examples only in decaying leaves in a hilly wood
 — *annularis*, Sahlb. *Tring*, rather common, in and about woods
 — *brachyptera*, Steph. *Tring*, most often found in the spring
Ischnoglossa prolixa, Grav. *Aldbury Common*, under oak bark
Ocyusa incrassata, Kr. *Tring*, scarce, in moss on old stumps. There are very few localities for this species further south, but it is generally distributed in the midland districts and the north
 — *maura*, Er. }
 — *picina*, Aubé. } *Tring*
Phlœopora reptans, Grav. }
Ocalea castanea, Er. }
 — *badia*, Er. }
Ilyobates nigricollis, Payk. *Wilstone*, scarce, four examples taken in refuse by the reservoir, April, 1900
 — *glabriventris*, Rye. *Tring*, very rare, two specimens taken by sweeping in a wood just on the border of the county, June, 1897
 'This species was found by Dr. Power in May and June, 1863, in the runs of *Formica fuliginosa*, and has not since been captured; it did not occur in the nest of the ants' (Fowler, *British Coleoptera*, vol. ii. p. 47). Dr. Power took his specimens at *Mickleham* in *Surrey*
Calodera riparia, Er. *Wilstone*, scarce, at the reservoir
 — *æthiops*, Grav. *Wilstone* and *Little Tring*, rather common

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ALEOCHARINA (*continued*)

- Calodera umbrosa*, Er. *Wilstone*, very rare, one specimen only under dead reeds at the reservoir. This insect occurs very frequently near *Chesham*, just over the county boundary
- Chilopora longitarsis*, Steph. *Tring*, a common marsh species
- Atemeles emarginatus*, Payk. One specimen found running on chalky pathway. This species is usually associated with the smaller ants. In that portion of the county which I have been able to explore I have not yet noticed the large ants *Formica rufa* and *F. fuliginosa*, with which so large a number of our myrmecophilous species occur, and consequently the number of such species included in this list is very small
- Myrmedonia funesta*, Grav. *Hertford* (Stephens)
- Astilbus canaliculatus*, F. *Tring*; *New Barnet* (Newbery)
- Callicerus obscurus*, Grav. *Wilstone*; *New Barnet* (Newbery)
- *rigidicornis*, Er. *Bovingdon*, rare, one specimen only; *Felden* (Piffard)
- Thamiarea cinnamomea*, Grav. *New Barnet* (Newbery)
- Alianta incana*, Er. *Tring*, not uncommon about the reservoirs
- Homalota languida*, Er. *Tring*, very rare, under refuse at the reservoirs
- *pavens*, Er. *Tring*, rare, one taken by sweeping in a moist wood
- *gregaria*, Er. *Tring*
- *fallax*, Kr. *Tring*, not uncommon under dead reeds, etc., at the reservoirs, but only found in the spring
- *luridipennis*, Mann. *Tring*
- *gyllenhali*, Thoms. *Tring*, fairly common at the reservoirs
- *hygrotopora*, Kr. *Tring*, scarce, with the preceding
- *elongatula*, Grav. *Tring*, very common
- *volans*, Scriba. *Tring*; several well-marked forms of this very variable species are to be found in the *Tring* district
- *oblongiuscula*, Sharp. *Tring*, scarce, in moss, etc.
- *vicina*, Steph. *Tring*; *New Barnet* (Newbery)
- *pagana*, Er. *Tring*, scarce, and only found singly
- *graminicola*, Gyll. *Tring*, very abundant in marshy places

ALEOCHARINA (*continued*)

- Homalota occulta*, Er. *Tring*, by no means a rare insect; found under carrion, in garden refuse, etc.
- *fungivora*, Thoms. *Tring*, not seen so often as the preceding
- *monticola*, Thoms. *Tring*, very rare, one male found under a stone
- *nigella*, Er. *Tring*, scarce, at the reservoirs
- *æquata*, Er. *Felden* (Piffard)
- *angustula*, Gyll. *Tring*; *New Barnet* (Newbery)
- *linearis*, Grav. *Tring*, occasionally found in rotten stumps of beech trees
- *debilis*, Er. *Tring*, common at the reservoirs
- *circellaris*, Grav. *Tring*; *New Barnet* (Newbery); found very commonly almost everywhere
- *splendens*, Kr. *Tring*, very rare, one specimen taken by sweeping early in July, 1898, on the hills
- *ægra*, Heer. *Tring*, very rare; near *Bovingdon*, taken in numbers occasionally
- *immersa*, Heer. *Aldbury Common*, under bark of oak
- *cuspidata*, Er. *Tring* and *Aldbury*
- *gemina*, Er. *Wilstone*, not common, under refuse at the reservoir in the spring
- *analisis*, Grav. *Tring*, very abundant everywhere
- *decipiens*, Sharp. *Little Tring*, rare
- *soror*, Kr. *Little Tring*, under stones in muddy spots by the reservoir, the males being much rarer than the females
- *exilis*, Er. *Wilstone*, not common
- *validiuscula*, Kr. *Tring*, very rare, two specimens only in dead leaves in October
- *depressa*, Gyll. *Tring*
- *hepatica*, Er. *Tring*, very rare
- *aquatica*, Thoms. *Wilstone*, scarce, by the reservoir
- *æneicollis*, Sharp. } *Tring*
- *xanthoptera*, Steph. }
- *euryptera*, Steph. Near *Bovingdon*, at sap; *New Barnet* (Newbery)
- *trinotata*, Kr. *Tring*; *New Barnet* (Newbery)
- *xanthopus*, Thoms. *Tring*, rare
- *triangulum*, Kr. *Tring*
- *fungicola*, Thoms. *Tring*, one of the most abundant species of the genus
- *ignobilis*, Sharp. *Tring*, rare, found chiefly in the month of August

INSECTS

ALEOCHARINA (*continued*)

- Homalota boletobia*, Thoms. *Tring*
 — *litrata*, Steph. Near *Bovingdon*, very local, but usually plentiful where found
 — *coriaria*, Kr. *Tring*, three or four taken from large piece of fungus growing on old beech stump; usually found in cut grass, etc. I once had a number sent me, which were found in an old disused squirrel's nest
 — *sodalis*, Er. *Tring*
 — *humeralis*, Kr. *Tring*, very rarely seen, but the species is really common in one or two of the woods at *Chesbam*, close to the county border
 — *gagatina*, Baudi. *Tring*
 — *divisa*, Märk. *Tring*, a decidedly common species near the town, found chiefly in dead animals
 — *nigricornis*, Thoms. *Aldbury Common*
 — *ravilla*, Er. *Wilstone*, four specimens under refuse at the reservoir, December, 1898
 — *palustris*, Kies. *Tring*
 — *corvina*, Thoms. *Aldbury Common*, in fungus on old stump
 — *puberula*, Sharp. *Tring*, one only in dead leaves on the hills
 — *atomaria*, Kr. *Flaunden*, one found floating on a pool of water
 — *perexigua*, Sharp. *Wilstone*, very rare, under refuse at the reservoir, April, 1898; *Aldbury*, one taken by sweeping
 — *scapularis*, Sahlb. *Tring*
 — *testaceipes*, Heer. *Aldbury*, rare, in dead leaves, October
 — *oblita*, Er. *Tring*
 — *autumnalis*, Er. *Wilstone*, very rare, in moss at the reservoir. By searching under the bark of fallen boughs, in marshy places during September, this species would probably be discovered in other parts of the county
 — *sericea*, Muls. }
 — *indubia*, Sharp. } *Tring*
 — *atricolor*, Sharp. }
 — *inquinula*, Grav. *Wigginton Common* and *Hastoe*
 — *nigra*, Kr. *Tring*
 — *hodierna*, Sharp. *Wilstone*, very rare, a few specimens found at the reservoir under dead reeds, April, 1897; and one more two years later
 — *germana*, Sharp. *Tring*, almost as plentiful as *nigra* in the district
 — *celata*, Er. Near *Bovingdon*, very rare
 — *sordidula*, Er. *Tring*

ALEOCHARINA (*continued*)

- Homalota canescens*, Sharp. *Tring*, often found in decaying fungi on the ground
 — *cauta*, Er. *Tring*
 — *villosula*, Kr. *Tring*, scarce
 — *atramentaria*, Gyll. *Tring*
 — *marcida*, Er. *Tring*, found in some of the woods in decaying fungi, rather late in the autumn; the specimens found in this district seem uniformly darker than those taken in the vicinity of London and further south
 — *intermedia*, Thoms. *Aldbury*, one only in dead leaves
 — *longicornis*, Grav. } *Tring*; *New Bar-*
 — *sordida*, Marsh. } *net* (Newbery)
 — *testudinea*, Er. *Tring*, not very often seen, but sometimes common where it occurs
 — *aterrima*, Grav. } *Tring*
 — *muscorum*, Bris. }
 — *pilosiventris*, Thoms. Near *Bovingdon*, two in a dead bird
 — *laticollis*, Steph. *Tring*
 — *montivagans*, Woll. *Tring*, very rare, one taken by sweeping, June, 1896
 — *fungi*, Grav. *Tring*, very abundant everywhere, and the var. *clientula* with it; *New Barnet* (Newbery)
 — *orphana*, Er. *Little Tring*, one only taken by sweeping
Gnypeta labilis, Er. *Tring*, very abundant on the banks of the reservoirs, and most variable both as to size and coloration
Tachyusa atra, Grav. *Wilstone*, found sparingly by the reservoir
 — *concolor*, Er. *Wilstone*, with the preceding; one year when the reservoir was very low this insect swarmed on the exposed mud; *Bovingdon* (Piffard)
Falagria sulcata, Payk. *Tring*
 — *sulcatula*, Grav. *Wilstone*, scarce, in moss, etc., at the reservoir
 — *thoracica*, Curt. *Tring*, rare
 — *obscura*, Grav. *New Barnet* (Newbery)
Autalia impressa, Ol. } *Tring*
 — *rivularis*, Grav. }
Encephalus complicans, Westwood. *Wilstone*, rare, one in moss growing on side of ditch; *Baldock*, one specimen (Wood)
Gyrophæna pulchella, Heer. *Felden* (Piffard)
 — *affinis*, Mann. *Tring*
 — *gentilis*, Er. *Tring*, not common
 — *nana*, Payk. } *Tring*
 — *fasciata*, Marsh. }

A HISTORY OF HERTFORDSHIRE

ALEOCHARINA (*continued*)

- Gyrophæna minima*, Er. *Tring*, usually in fungi on old stumps
 — *lævipennis*, Kr. *Tring* and *Asbridge*
 — *lucidula*, Er. *Wilstone*, very rare, two examples in refuse by the reservoir, April, 1900; this species, unlike all other members of the genus, has not been found in fungi in this country
 — *manca*, Er. *Tring* and *Wilstone*; this insect seems very seldom to be met with in the south of England, and it is noteworthy that I have never met with it on the southern slopes of the Chilterns about Chesham, although it seems to occur pretty generally on the northern slopes of the range in the vicinity of *Tring*, only a few miles distant
 — *strictula*, Er. *Flaunden*, at one spot only, in fungus on old stump
Agaricochara lævicollis, Kr. *Tring*, in fungus on old stumps in woods
Placusa pumilio, Grav. Near *Bovingdon*, scarce, under oak bark
Epipeda plana, Gyll. *Aldbury* and *Little Tring*
Leptusa fumida, Er. *Tring*, common in the beech woods under bark
Sipalia ruficollis, Er. *Tring*
Bolitochara lucida, Grav. *Tring Park*, in tree fungus; *Baldock* (Wood)
 — *bella*, Märk. *Tring Park*, taken sparingly
Hygronoma dimidiata, Grav. *Wilstone*, fairly common, at the reservoir
Oligota inflata, Mann. *Tring*, rather common in garden refuse; *New Barnet* (Newbery)
 — *pusillima*, Grav. *Wilstone*, scarce
 — *punctulata*, Heer. } *Tring*
 — *atomaria*, Er. }
 — *apicata*, Er. *Tring*, two in rotten beech
Myllæna dubia, Grav. *Wilstone*; *Wigginton*, rather common in moss on pond bank
 — *intermedia*, Er. *Wilstone*, scarce, at the reservoir
 — *kraatzi*, Sharp. *Aldbury Common*, rare, on the clayey banks of a pond
 — *infusca*, Matth. (?) *Wigginton*, a small *Myllæna*, which may be this species, occurs plentifully in moss on a pond bank at this village
Gymnusa brevicollis, Payk. *Shantock*; *Bovingdon* (Piffard)
Deinopsis erosa, Steph. *Hastoe*, among dead leaves in the middle of a dried up pond

TACHYPORINA

- Hypocyptus longicornis*, Payk. *Tring*
 — *discoideus*, Er. *Wilstone*, very rare, under reeds by the reservoir
Conosoma littoreum, L. *Tring*
 — *pubescens*, Grav. *Tring*; *New Barnet* (Newbery)
 — *lividum*, Er. *Tring*, scarce
Tachyporus obtusus, L. } *Tring*
 — *formosus*, Matth. }
 — *solutus*, Er. *Wilstone*, very rare, by sweeping
 — *pallidus*, Sharp. *Wilstone*, rather rare, under dead reeds by the reservoir
 — *chrysomelinus*, L. }
 — *humerosus*, Er. } *Tring*
 — *hypnorum*, F. }
 — *pusillus*, Grav. } *Tring*; *New Barnet*
 — *brunneus*, F. } (Newbery)
Cilea silphoides, L. *Tring*, scarce
Tachinus flavipes, F. *Tring*, one specimen in *stercore ovino*
 — *humeralis*, Grav. *Tring*; *New Barnet*, (Newbery)
 — *rufipes*, L. }
 — *subterraneus*, L. } *Tring*
 — *marginellus*, F. }
 — *laticollis*, Grav. *New Barnet* (Newbery)
Megacronus cingulatus, Mann. *Wilstone*, rare, in refuse
 — *analisis*, F. *Aldbury*, scarce, in moss
 — *inclinans*, Grav. *Aldbury*, rare
Bolitobius lunulatus, L. }
 — *trinotatus*, Er. } *Tring*
 — *exoletus*, Er. }
 — *pygmaeus*, F. *Tring*
Mycetoporus splendens, Marsh. *Wilstone*, not common, in refuse
 — *punctus*, Gyll. *Tring*, rare, taken by sweeping on the hills
 — *lepidus*, Grav. *Tring*, scarce
 — *longulus*, Mann. *Wilstone*
 — *nanus*, Er. *Hastoe*, one only in dead leaves
 — *clavicornis*, Steph. *Tring*, rare
 — *splendidus*, Grav. *Tring*, not uncommon, at the reservoirs
Habrocerus capillaricornis, Grav. *Aldbury*, in dead leaves

STAPHYLININA

- Heterothops dissimilis*, Grav. *Tring*, rare, in haystack refuse
 — *quadripunctula*, Gyll. *Wilstone*, one in refuse by the reservoir, April, 1900
Quedius longicornis, Kr. (?) *Bricket Wood* (Lewcock)
 — *lateralis*, Grav. *Tring*, not rare, in rotten fungi in September
 — *mesomelinus*, Marsh. *Tring*
 — *fulgidus*, F. *New Barnet* (Newbery)

INSECTS

STAPHYLININA (*continued*)

- Quedius puncticollis*, Thoms. *Aldbury*, rare, taken by sweeping
- *cruentus*, Ol. Near *Hadley Wood* in *cossus* burrows (Newbery)
- *cinctus*, Payk. } *Tring*; *New Barnet* (Newbery)
- *fuliginosus*, Grav. }
- *tristis*, Grav. }
- *molochinus*, Grav. }
- *picipes*, Mann. *Tring*
- *nigriceps*, Kr. *Tring*, rare
- *fumatus*, Steph. *Aldbury*
- *maurorufus*, Grav. *Tring* and *Wilstone*
- *umbrinus*, Er. *Wilstone*, rare, at the reservoir
- *rufipes*, Grav. }
- *attenuatus*, Gyll. } *Tring*
- *boops*, Grav. }
- Creophilus maxillosus*, L. *Tring*
- Leistotrophus nebulosus*, F. *Tring* and *Aldbury*, rather common, in very putrid fungi, on the hills
- *murinus*, L. *Bovingdon*, scarce, and usually found in carcasses
- Staphylinus pubescens*, De G. *Tring*, rare
- *fulvipes*, Scop. *Tring*, one found running on the ground in an open chalky spot
- *stercorarius*, Ol. *Tring*, rare, one caught running on roadway, and one captured in like manner by Mr. J. L. Foulkes
- *latebricola*, Grav. *Tring*, in May, 1891, I found quite a number on the wing at one particular spot on the hills just on the county border; when flying this insect much resembles some of the small Hymenoptera
- *cæsareus*, Ceder. *Wilstone*
- Ocypus olens*, Müll. *Tring*
- *brunnipes*, F. *Tring*, rather scarce; *New Barnet* (Newbery)
- *cupreus*, Rossi. *Tring*
- *ater*, Grav. *New Barnet* (Newbery)
- *morio*, Grav. *Tring*
- *compressus*, Marsh. *Tring*, found rarely under stones and in moss, on the hills
- Philonthus splendens*, F. *Tring*
- *intermedius*, Boisd. *Tring*; *New Barnet* (Newbery)
- *laminatus*, Creutz. }
- *æneus*, Rossi. }
- *proximus*, Kr. }
- *carbonarius*, Gyll. *Tring*, scarce, in rotten fungi
- *decorus*, Grav. *Bovingdon*, rare, in dead leaves
- *politus*, F. *Tring*

STAPHYLININA (*continued*)

- Philonthus varius*, Gyll. *Tring*; *New Barnet* (Newbery)
- *marginatus*, F. *Tring*
- *albipes*, Grav. *Tring*, rare; *New Barnet* (Newbery)
- *cephalotes*, Grav. *Tring*
- *finetarius*, Grav. } *Tring*; *New Barnet* (Newbery)
- *sordidus*, Grav. }
- *ebeninus*, Grav. *Tring*
- *fumigatus*, Er. Near *Flaunden*, rare, in moss in a wood
- *debilis*, Grav. *Tring*, rare; *New Barnet* (Newbery)
- *sanguinolentus*, Grav. *Wilstone*
- *cruentatus*, Gmel. *Tring*
- *longicornis*, Steph. *Tring*, frequently found in garden refuse
- *varians*, Payk. *Tring*; *New Barnet* (Newbery)
- *ventralis*, Grav. *Tring*, scarce
- *discoideus*, Grav. *Tring*
- *quisquiliarius*, Gyll. *Tring*, very common by the reservoirs
- *fumarius*, Grav. *Wilstone*, rare, at the reservoir
- *trossulus*, Nord. *Tring*; *New Barnet* (Newbery)
- Xantholinus glabratus*, Grav. } *Tring*
- *punctulatus*, Payk. }
- *ochraceus*, Gyll. *Wilstone*
- *tricolor*, F. *Tring*, rare
- *linearis*, Ol. *Tring*
- *longiventris*, Heer. *Aldbury*, scarce, under bark; *New Barnet* (Newbery)
- Leptacinus parumpunctatus*, Gyll. *Little Tring*, rare, under stones by the reservoir
- *batychrus*, Gyll. Near *Flaunden*
- *linearis*, Grav. *Tring*; *New Barnet* (Newbery)
- Baptolinus alternans*, Grav. *Tring*, rare, under bark
- Othius fulvipennis*, F. *Tring*
- *læviusculus*, Steph. *Little Tring*, rare
- *melanocephalus*, Grav. }
- *myrmecophilus*, Kies. } *Tring*

PÆDERINA

- Lathrobium elongatum*, L. *Little Tring*; *New Barnet* (Newbery)
- *fulvipenne*, Grav. *Tring*; *New Barnet* (Newbery)
- *brunnipes*, F. *Tring*
- *longulum*, Grav. *Wigginton* and *Wilstone*; *New Barnet* (Newbery)
- *filiforme*, Grav. *Wilstone*, rare, in refuse and moss by the reservoir
- *quadratum*, Payk. *Wilstone*, scarce, with the preceding

A HISTORY OF HERTFORDSHIRE

PSYLAPHINA (*continued*)

- Tychus niger*, Payk. *Tring*
Bythinus puncticollis, Denny. *Hastoe*, in dead leaves at Brown's Lane
 — *bulbifer*, Reich. *Tring*, common at the reservoirs
 — *curtisi*, Denny. *Tring*, rather common, in dead leaves
 — *burrelli*, Denny. Near *Flaunden*, from moss in a wood
Bryaxis sanguinea, L. *Wilstone*, rare, in moss at the reservoir
 — *fossulata*, Reich. *Tring*
 — *juncorum*, Leach. *Wilstone*, under dead reeds by the reservoir
 — *impressa*, Panz. *Hertford* (Stephens)
Trichonyx märkeli, Aubé. *Wilstone*, one in some refuse
Euplectus signatus, Reich. } *Tring*; *New Bar-*
 — *sanguineus*, Denny. } *net* (Newbery)
 — *piceus*, Mots. *Tring*, rare, under bark

CLAVIGERINA

- Claviger testaceus*, Preyss. *Tring*, in nests of *Formica flava*

SCYDMÆNIDÆ

- Neuraphes elongatulus*, Müll. *Aldbury*, rare, in fungus
 — *angulatus*, Müll. *Aldbury*, rare, in dead leaves
Scydmænus scutellaris, Müll. *Tring*; *New Barnet* (Newbery)
 — *collaris*, Müll. *Tring*
Euconnus hirticollis, Ill. *Wilstone*, in refuse by the reservoir
 — *fimetarius*, Chaud. *Tring*, in garden refuse
Eumicrus tarsatus, Müll. *Tring*; *New Barnet* (Newbery)
Eutheia scydmænoides, Steph. *Little Tring*, one taken by sweeping
Cephennium thoracicum, Müll. *Tring*

LEPTINIDÆ

- Leptinus testaceus*, Müll. Near *Bovingdon*, three examples in dead leaves; *Shot-hanger Common* (Piffard)

SILPHIDÆ

CLAMBINA

- Calyptomerus dubius*, Marsh. *Tring*, in haystack refuse
Clambus pubescens, Redt. *Tring*
 — *armadillo*, De G. *Tring*; *New Barnet* (Newbery)
 — *minutus*, Sturm. *Wilstone*

ANISOTOMINA

- Agathidium nigripenne*, Kug. *Aldbury Common*, etc., occurs rather frequently, under bark of beech

ANISOTOMINA (*continued*)

- Agathidium atrum*, Payk. *Aldbury*, in dead leaves
 — *seminulum*, L. *Tring*, rare
 — *lævigatum*, Er. *Aldbury*, in dead leaves
 — *varians*, Beck. *Tring*, not uncommon, in dead clematis stems and old beech stumps
 — *convexum*, Sharp. *Tring*, rare, in dead leaves
 — *rotundatum*, Gyll. *Wilstone*, one specimen only, in moss near the reservoir
 — *nigrinum*, Sturm. *Aldbury*, rare, in dead leaves
Liodes humeralis, Kug. Near *Wigginton*, in fungus, in a wood
 — *orbicularis*, Herbst. *Flaunden*, very rare, in moss on a rotten stump
Anisotoma cinnamomea, Er. *Tring*, one taken by sweeping on a damp evening in September
 — *oblonga*, Er. (*grandis*, Fairm.). *Tring*, very rare, in *Stubbing's Wood*
 — *dubia*, Kug. *Tring*
 — *obesa*, Schmidt. *Shot-hanger Common* (Piffard)
 — *badia*, Sturm. *Wilstone*, scarce, by the reservoir
 — *ovalis*, Schmidt. *Tring*, less rare than most species of the genus
 — *calcarata*, Er. *Tring*
Colenis dentipes, Gyll. *Tring*, rather common
Agaricophagus cephalotes, Schmidt. *Little Tring*, rare, a pair taken by sweeping
Hydnobius punctatissimus, Steph. *Shot-hanger Common* (Piffard)
 — *strigosus*, Schmidt. *Tring*, very rare

SILPHINA

- Necrophorus humator*, F. *Tring*
 — *mortuorum*, F. *Tring*, often found in rotten fungi
 — *ruspator*, Er. } *Wigginton Common*
 — *vespillo*, L. }
Necrodes littoralis, L. *Tring*
Silpha thoracica, L. *Aldbury*, rare
 — *rugosa*, L. } *Tring*
 — *sinuata*, F. }
 — *lævigata*, F. *Aldbury* and *Tring*
 — *atrata*, L. *Tring*

CHOLEVINA

- Choleva angustata*, F. } *Tring*
 — *cisteloides*, Fröhl. }
 — *spadicea*, Sturm. *Aldbury*, rare, in dead leaves; *Potten End*; *Berkhamsted* (Piffard)
 — *agilis*, Ill. *New Barnet* (Newbery)
 — *velox*, Spence. } *Tring*
 — *wilkini*, Spence. }

INSECTS

CHOLEVINA (*continued*)

- Choleva anisotomoides*, Spence. *Aldbury*, plentiful in dead leaves
 — *fusca*, Panz. *Aldbury*, rare
 — *morio*, F. *Wilstone*, rare; four taken under dead reeds at the reservoir, April, 1900
 — *grandicollis*, Er. *Tring Park*, rare, in fungus growing on an elm
 — *nigrita*, Er. *Tring*, rare, in dead leaves
 — *tristis*, Panz. *Tring*
 — *kirbyi*, Spence. *Aldbury*, not common, in dead leaves
 — *chrysomeloides*, Panz. } *Tring*
 — *fumata*, Spence. }
 — *watsoni*, Spence. *Aldbury*
Ptomaphagus sericeus, F. *Tring*
Colon serripes, Sahl. *Wilstone*, rare, by sweeping near the reservoir
 — *dentipes*, Sahl. *Felden* (Piffard)
 — *brunneum*, Latr. *Tring*
 — *latum*, Kr. Near *Bovingdon*, in moss, in winter
Bathyscia wollastoni, Jans. *Tring*, very rare, once found in some hedge clippings

HISTERIDÆ

- Hister unicolor*, L. } *Tring*
 — *cadaverinus*, Hoff. }
 — *purpurascens*, Herbst. *Tring*, rare
 — *carbonarius*, Ill. *Tring*
 — *12-striatus*, Schr. *Tring Park*, rare; *New Barnet* (Newbery)
 — *bimaculatus*, L. *Wigginton Common*, rare
Saprinus nitidulus, Payk. *Tring*
 — *æneus*, F. *Wilstone*, scarce
 — *virescens*, Payk. *Felden* (Piffard)
Abreus globosus, Hoff. *Wilstone*, in rotten elm stump
Acritus minutus, Herbst. *Tring*
Onthophilus striatus, F. *Tring*; *New Barnet* (Newbery)

SCAPHIDIIDÆ

- Scaphisoma agaricinum*, L. *Tring Park*
 — *boleti*, Panz. *Wilstone*, in old willow stump

TRICHOPTERYGIDÆ

- Pteryx suturalis*, Heer. *Tring*, under bark and in rotten wood
Ptinella testacea, Heer. *Aldbury*; I once found a rather large colony under bark of beech
Trichopteryx atomaria, De G. } *Tring*; *New Barnet* (Newbery)
 — *grandicollis*, Mann. }
 — *lata*, Mots. }

- Trichopteryx cantiana*, Matth. (?) Near *Flaunden*, one specimen in a moist wood, among dead leaves
 — *fascicularis*, Herbst. *Tring*
 — *seminitens*, Matth. *Wilstone*; a species occurs commonly at the reservoir, which Mr. Champion says agrees with specimens he has from *Kent*, named *seminitens*
 — *sericans*, Heer. (?) } *Tring*
 — *bovina*, Mots. }
 — *brevipennis*, Er. *Wilstone*, common, in dead reeds, moss, etc., at the reservoir
 — *picicornis*, Mann. (?) *Wilstone*, rare; a few in an old poplar stump
 — *chevrolati*, All. *Tring*
Nephanes titan, Newm. *Tring*, rather common, in garden refuse
Ptilium kunzei, Heer. } *Tring*
 — *spencei*, All. }
 — *foveolatum*, All. *Tring*, scarce, in a piece of rotten matting
Millidium trisulcatum, Aubé. *Tring*, not common, in refuse
Ptenidium fuscicorne, Er. *Wilstone*, common, under dead reeds at the reservoir, in spring
 — *nitidum*, Heer. *Tring*
 — *evanescens*, Marsh. *Tring*; *New Barnet* (Newbery)
 — *atomaroides*, Mots. *Tring*; Mr. J. W. Shipp told me he found this species at the reservoirs, but I have not met with it myself
 — *kraatzii*, Matth. *Wilstone*, six specimens found in a rotten poplar, which agree well with the description of this species
 — *formicetorum*, Kr. *Wilstone*. A considerable number of specimens of a *Ptenidium* taken with the preceding puzzled me much for some time; they were finally identified as this species by Mr. Champion

CORYLOPHIDÆ

- Orthoperus kluki*, Wank. (?) *Aldbury*
 — *atomus*, Gyll. *Little Tring*, very rare
Corylophus cassidioides, Marsh. *Wilstone*, not uncommon at the reservoir
Sericoderus lateralis, Gyll. *Tring*; *New Barnet* (Newbery)

COCCINELLIDÆ

- Subcoccinella 24-punctata*, L. *Aldbury* and *Tring*
Hippodamia variegata, Goeze. *Aldbury*, rare

A HISTORY OF HERTFORDSHIRE

- Anisosticta* 19-punctata, L. *Wilstone*, very common, at the reservoir; *Hertford* (Stephens)
- Adalia* oblitterata, L. } *Tring*
 — bipunctata, L. }
- Mysia* oblongoguttata, L. *Hertford* (Stephens)
- Coccinella* 10-punctata, L. } *Tring*
 — 11-punctata, L. }
 — 7-punctata, L. }
- Halyzia* 16-guttata, L. *Tring*, rare
 — 14-guttata, L. *Tring*
 — 18-guttata, L. *Hertford* (Stephens)
 — conglobata, L. } *Tring*
 — 22-punctata, L. }
- Micraspis* sedecimpunctata, L. *Aldbury*, scarce; have only seen this insect on *Aldbury Owers*
- Scymnus* pygmæus, Fourc. *Aldbury*, not common
 — frontalis, F. *Tring*
 — suturalis, Thunb. *Tring*, rare; once found in moss under some fir trees
 — testaceus, Mots. *Tring*, rare; a small variety of this species at the roots of *Thymus serpyllum*
 — hæmorrhoidalis, Herbst. } *Tring*
 — capitatus, F. }
 — minimus, Rossi. *Tring*, of frequent occurrence in the garden
- Platynaspis* luteorubra, Goeze. *Hertford* (Stephens)
- Chilocorus* similis, Rossi. *Tring*. I once witnessed an extraordinary swarm of this insect in a plantation consisting chiefly of ash, when there must have been scores of the insect crawling on some of the trees; this was in April
- bipustulatus, Ill. *Hertford* (Stephens)
- Exochomus* quadripustulatus, L. *Wilstone*, one example only, on a willow
- Rhizobius* litura, F. *Tring*
- Coccidula* rufa, Herbst. *Tring*, common, at the reservoirs

ENDOMYCHIDÆ

- Mycetæa* hirta, Steph. *Tring*, not common, in refuse
- Alexia* pilifera, Müll. *Aldbury*, in dead leaves
- Lycoperdina* bovistæ, F. *Aldbury*, rare.
 This insect is by no means confined to puff-balls, for I once found a number in a very putrid lamellated fungus growing in a wood near *Tring* (in *Bucks*), and have had a similar experience elsewhere
- Endomychus* coccineus, L. *Aldbury* and *Tring*, common, under bark of beech; *Stubbings*, *Pavis* and *Aldbury Owers woods*

EROTYLIDÆ

- Dacne* humeralis, F. *Tring*, rare, in decaying beech tree
 — rufifrons, F. *Tring*

PHALACRIDÆ

- Phalacrus* corruscus, Payk. *Tring*
 — caricis, Sturm. *Wilstone* and *Puttenham*, very common, on *Carices*, beside the *Collateral canal*, in May
- Olibrus* corticalis, Panz. *Tring*, fairly common
 — æneus, F. } *Tring*
 — bicolor, F. }
Eustilbus testaceus, Panz. }
 — atomarius, L. *Miswell*, one only, in a hedgerow

MICROPEPLIDÆ

- Micropeplus* porcatus, Payk. *Aldbury*
 — staphylinoides, Marsh. } *Tring*
 — margaritæ, Duv. }

NITIDULIDÆ

- Brachypterus* gravidus, Ill. *Aldbury*, on *Linaria vulgaris*
 — pubescens, Er. } *Tring*
 — urticæ, F. }
Cercus pedicularius, L. *Puttenham* and *Wilstone*, on *Carices*, by the *Collateral canal*; *Baldock* (Wood)
 — bipustulatus, Payk. *Little Tring*
 — rufilabris, Latr. *Little Tring* and *Wilstone*
- Epuræa* decemguttata, F. Near *Hadley Wood*, in *cosus* burrows (*Newbery*)
 — æstiva, L. *Tring*
 — melina, Er. *Wilstone*, scarce, on flowers at the reservoir
 — florea, Er. *Tring*
 — deleta, Er. *Tring Park*, in fungus on a tree
 — obsoleta, F. *Tring*
 — pusilla, Er. *Tring*, scarce
 — augustula, Er. *Tring*, one under bark of beech; *Felden* (*Piffard*)
- Omosiphora* limbata, F. *Wilstone*, two found at the base of an old ash tree, in April
- Nitidula* bipustulata, L. *Aldbury*
 — rufipes, L. *Aldbury*, rare
- Soronia* grisea, L. *Little Tring*, rare, under elm bark; *New Barnet* (*Newbery*)
- Omosita* colon, L. } *Tring*, *New Barnet*
 — discoides, F. } (*Newbery*)
- Pocadius* ferrugineus, F. *Tring*
- Pria* dulcamaræ, Scop. *Tring* and *Wilstone*, frequently found on *Solanum dulcamara*

INSECTS

- Meligethes rufipes*, Gyll. *Tring*; *New Barnet* (Newbery)
 — *lumbaris*, Sturm. *Aldbury* and *Tring*, on flowers of *Verbascum thapsus* and *Umbelliferae*
 — *coracinus*, Sturm. *Tring*, one only, on *Origanum vulgare*, in a chalkpit
 — *æneus*, F. *Tring*
 — *viridescens*, F. *Wilstone*
 — *difficilis*, Heer.
 — *memnonius*, Er. } *Tring*
 — *brunnicornis*, Sturm. }
 — *viduatus*, Sturm. *Tring*, a few specimens in flowers of *Ballota nigra*, in *Grove Park*
 — *bidens*, Bris. *Tring*, usually found in flowers of *Scabiosa arvensis*
 — *umbrosus*, Sturm. *Aldbury*, rare
 — *ovatus*, Sturm. }
 — *flavipes*, Sturm. } *Tring*
 — *picipes*, Sturm. }
 — *serripes*, Gyll. *Tring*; this insect seems most abundant early in the spring
 — *lugubris*, Sturm. *Aldbury*, scarce.
 — *obscurus*, Er. *Aldbury*
 — *erythropus*, Gyll. *Aldbury* and *Tring*, a common species on the chalk
 — *solidus*, Sturm. *Aldbury*, on *Helianthemum vulgare*
Cychramus luteus, F. } *Tring*
 — *fungicola*, Heer. }
Cryptarcha strigata, F. *Wigginton Common*
 — *imperialis*, F. *Watford* (Lewcock)

TROGOSITIDÆ

- Tenebrioides mauritanicus*, L. *Tring*, occasionally found in flour, oatmeal and other stores

COLYDIIDÆ

- Cicones variegatus*, Hellw. *Aldbury*; I once found twenty specimens under bark of a beech, on *Aldbury Owers*
Cerylon histroides, F. Near *Bovingdon*, scarce
 — *fagi*, Bris. *Aldbury* and *Tring*, under bark of beech

CUCUJIDÆ

- Rhizophagus cribratus*, Gyll. *Tring* (Piffard)
 — *depressus*, F. *Wilstone*; *Hertford* (Stephens)
 — *parallelus*, Er. *Tring*, rare
 — *ferrugineus*, Payk. *Aldbury*
 — *bipustulatus*, F. *Tring*
Læmophloeus ferrugineus, Steph. *Tring*, often met with in the woods under bark of beech; *Hertford* (Stephens)

- Psammoechus bipunctatus*, F. *Wilstone*, scarce, at the reservoir; *Hertford* (Stephens); *Baldock* (Wood)
Silvanus surinamensis, L. *Tring*, once seen in a house; *Baldock* (Wood)

MONOTOMIDÆ

- Monotoma spinicollis*, Aubé. *Tring*, scarce
 — *picipes*, Herbst. *Tring*; *New Barnet* (Newbery)
 — *quadricollis*, Aubé. *Tring*.
 — *rufa*, Redt. *Tring*, in haystack refuse

LATHRIDIIDÆ

- Holoparamesus depressus*, Curt. *Hertford* (Stephens)
Lathridius lardarius, De Geer. *Tring*
 — *angulatus*, Humm. *Tring*, rare, in old hedges
Coninomus nodifer, Westwood. *Tring*
 — *carinatus*, Gyll. *Tring*, rare, once found in a house
Enicmus minutus, L. } *Tring*
 — *transversus*, Ol. }
Cartodere ruficollis, Marsh. *Tring*, scarce, in haystack refuse
Corticaria pubescens, Gyll. *Tring*
 — *crenulata*, Gyll. *Wilstone*
 — *denticulata*, Gyll. *Tring*
 — *elongata*, Humm. *Tring*; *New Barnet* (Newbery)
 — *fenestralis*, L. *Aldbury*, rare, in moss on a chalky bank
Melanophthalma gibbosa, Herbst. } *Tring*
 — *fuscata*, Humm. }

CRYPTOPHAGIDÆ

- Diphyllus lunatus*, F. Near *Flaunden*, once found in numbers in black fungus, on old ash stump; *Baldock* (Wood)
Telmatophilus caricis, Ol. *Wigginton* and *Miswell*
Antherophagus nigricornis, F. *Tring*
 — *pallens*, Gyll. *Aldbury*; *Tring* (Piffard)
Cryptophagus lycoperdi, Herbst. *Tring*, not common in the district
 — *setulosus*, Sturm. *Tring*
 — *pilosus*, Gyll. *Tring*, rare, in haystack refuse
 — *punctipennis*, Bris. }
 — *sagittatus*, Sturm. } *Tring*
 — *scanicus*, L. }
 — *badius*, Sturm. *Wilstone*, rare, in refuse by the reservoir
 — *dentatus*, Herbst. *Tring*
 — *distinguendus*, Sturm. *Wilstone*, rare, under dead reeds
 — *acutangulus*, Gyll. }
 — *cellaris*, Scop. } *Tring*
 — *affinis*, Sturm. }

A HISTORY OF HERTFORDSHIRE

Cryptophagus pubescens, Sturm. *Tring*, rare,
by sweeping; may often be bred from
old nests of *Vespa vulgaris*
— *bicolor*, Sturm. *Tring*, rare, in hay-
stack refuse

Micrambe vini, Panz. *Tring*
Cænoscelis pallida, Woll. *Little Tring*,
one taken by evening sweeping
Atomaria barani, Bris. *Wilstone*, rare,
under dead reeds by the reservoir
— *nigriventris*, Steph. *Tring*
— *umbrina*, Er. *Aldbury*, in dead leaves
in a wood
— *linearis*, Steph. *Tring*
— *elongatula*, Er. (?) *Wilstone*
— *fuscipes*, Gyll. } *Tring*
— *fuscata*, Schönn. }
— *pusilla*, Payk. }
— *atricapilla*, Steph. }
— *berolinensis*, Kr. *Aldbury*, in dead
leaves
— *basalis*, Er. *Wilstone*, very rare, by the
reservoir
— *mesomelas*, Herbst. *Wilstone*, with the
preceding; a form occurs here, with
the elytræ entirely dark
— *gutta*, Steph. *Wilstone*, scarce, with
the preceding
— *apicalis*, Er. } *Tring*; *New Bar-*
— *anal*, Er. } *net* (Newbery)
— *ruficornis*, Marsh. }
Ephistemus gyrinoides, Marsh. *Tring*

MYCETOPHAGIDÆ

Typhæa fumata, L. *Tring*
Triphyllus suturalis, F. *Tring Park* and
Wilstone
— *punctatus*, F. *Wigginton*, rare, in *Round*
Hill Wood
Litargus bifasciatus, F. *Tring*, frequently
found under bark of beech
Mycetophagus quadripustulatus, L. *Tring*
— *piceus*, F. *Aldbury*, rare
— *atomarius*, F. *Tring Park*
— *quadriguttatus*, Müll. *Felden* (Piffard)
— *multipunctatus*, Hellw. *Tring*

BYTURIDÆ

Byturus sambuci, Scop. } *Tring*
— *tomentosus*, F. }

DERMESTIDÆ

Dermestes murinus, L. *Tring*, rare, once
found on a dead bird
— *lardarius*, L. } *Tring*
Attagenus pello, L. }
Tiresias serra, F. *Wilstone*, bred from
larvæ found under elm bark, in April
Anthrenus musæorum, L. *Baldock* (Wood)

Anthrenus claviger, Er. *Tring*, rather
common on flowers of *Umbelliferæ*
Trinodes hirtus, F. *Long Marstone* (Shipp)

BYRRHIDÆ

Syncalypta spinosa, Rossi. *Aldbury*, rare,
in chalky places
Byrrhus pilula, L. } *Tring*
— *fasciatus*, F. }
Cytilus varius, F. *Wilstone*, in moss by the
reservoir
Simplocaria semistriata, F. *Tring*
Aspidiphorus orbiculatus, Gyll. *Tring*,
rare, taken by sweeping

PARNIDÆ

Elmis æneus, Müll. *Wilstone*, in the
streams which feed the reservoir
— *volkmari*, Panz. Near *Hatfield* (Ste-
phens)
— *subviolaceus*, Müll. *Wilstone*, rare, in
a stream
Limnius tuberculatus, Müll. *Little Tring*,
in the canal
Parnus prolifericornis, F. *Wilstone*, at the
reservoir
— *auriculatus*, Panz. *Wilstone*, with the
preceding
— *algericus*, Lucas. *Ashbridge*; *Berkham-*
sted Common (Piffard)

HETEROCERIDÆ

Heterocerus lævigatus, Panz. *Little Tring*
and *Wilstone*, in muddy spots by the
reservoir

LUCANIDÆ

Lucanus cervus, L. *Little Tring* and *Put-*
tenham, one example from each local-
ity; *St. Albans* (A. E. Gibbs); I
should say that the stag-beetle is
decidedly rare in the county
Sinodendron cylindricum, L. *Wilstone*, rare,
dead specimens only in a rotten ash
tree

SCARABÆIDÆ

COPRINA

Onthophagus ovatus, L. *Tring*; *Hertford*
(Stephens)
Aphodius erraticus, L. } *Tring*
— *subterraneus*, L. }
— *fossor*, L. }
— *hæmorrhoidalis*, L. *Wilstone*, not com-
mon; *Hertford* (Stephens)
— *foetens*, F. *Tring*, scarce, on the hills
— *fimetarius*, L. *Tring*
— *scybalarius*, F. *Hastoe*, rare

INSECTS

COPRINA (continued)

- Aphodius ater, De G. *Tring*
- granarius, L. *Tring* and *Wilstone*
- rufescens, F. *Tring*, rare
- putridus, Sturm. *Asbridge* (Piffard)
- lividus, Ol. *Tring*, very scarce
- pusillus, Herbst. } *Tring*
- merdarius, F. }
- inquinatus, F. *Wilstone*, rare
- sticticus, Panz. *Tring*, not common ;
Hertford (Stephens)
- punctato-sulcatus, Sturm. } *Tring*
- prodromus, Brahm. }
- contaminatus, Herbst. *Tring*, very common
- oblitteratus, Panz. *Tring*, rare
- luridus, F. *Wilstone*
- rufipes, L. *Tring*

Plagiogonus arenarius, Ol. *Tring*, several specimens taken flying in hedgerow in *Duckmore Lane*; also in *stercore ovino*

Odontæus mobilicornis, F. *Tring*, very rare, one found on the pavement in *Park Road* by Dr. Jordan; *Felden* (Piffard); *Hertford* (Stephens). Dr. Churchill of Chesham presented me with a fine female specimen of this very rare insect, which he caught in the town, so the species is probably pretty generally distributed in this part of the country

- Geotrupes spiniger, Marsh. } *Tring*
- stercorarius, L. }
- sylvaticus, Panz. *Bovingdon*, rare
- pyrenæus, Charp. *Hertford* (Stephens)
- Trox sabulosus, L. *Berkhamsted*, rare
- scaber, L. *Tring*; Mr. J. W. Shipp once took this species in some numbers on an old pear or apple tree

MELOLONTHINA

- Hoplia philanthus, Füss. *Aldbury*; scarce ;
Kings Langley (Piffard)
- Homalopia ruricola, F. *Aldbury*; *Tring* (Piffard); this insect is to be seen flying in numbers on favourable sunny mornings in the latter half of June, and the black variety may be found with it. Mr. Champion has noticed on the continent that the time of appearance is very short, and this seems to be the case in this country
- Serica brunnea, L. *Tring*, rare ; *Boxmoor* (Piffard)
- Rhizotrogus solstitialis, L. *Tring*, very abundant some years, flying in hedges near the town
- Melolontha vulgaris, F. *Tring*

RUTELINA

- Phyllopertha horticola, L. *Tring*, not at all common

BUPRESTIDÆ

- Agrilus laticornis, Ill. *Bovingdon*, rare in hazel bushes, on the outskirts of a wood
- angustulus, Ill. *Bricket Wood* (Piffard), *Hertford* (Stephens)

THROSCIDÆ

- Throscus dermestoides, L. *Tring*, rare ; *New Barnet* (Newbery); *Hertford* (Stephens)
- carinifrons, Bonv. *New Barnet* (Newbery)

EUCNEMIDÆ

- Melasis buprestoides, L. *Felden* (Piffard)

ELATERIDÆ

- Lacon murinus, L. *Tring*, not uncommon at some spots on the hills
- Cryptohypnus riparius, F. *Tring*, scarce, in marshy places
- quadripustulatus, F. *Hertford* (Stephens)
- Melanotus rufipes, Herbst. *Wilstone*, scarce
- Athous niger, L. *Tring*
- longicollis, Ol. *Aldbury* and *Tring*, rather common
- hæmorrhoidalis, F. *Tring*, a very common insect
- vittatus, F. *Tring*, rare
- Limonium minutus, L. } *Tring*
- Adrastus limbatus, F. }
- Agriotes sputator, L. } *Tring*; *New Barnet* (Newbery)
- obscurus, L. }
- lineatus, L. }
- sobrinus, Kies. *Aldbury*, scarce
- pallidulus, Ill. } *Tring*
- Dolopius marginatus, L. }
- Corymbites cupreus, F. *Tring*; I have one specimen which was picked up on the churchyard pathway several years ago by Mr. J. L. Foulkes
- tessellatus, F. *Wilstone*, not uncommon in one corner of a marshy field
- quercus, Gyll. *Tring*, rare
- holosericeus, F. *Tring*, not uncommon in spring and early summer on the hills
- æneus, L. *Tring*, rare ; two specimens on *Pitstone Hill* just on the border of Herts
- bipustulatus, L. *Longcroft*; *Bovingdon* (Piffard)
- Campylus linearis, L. *Tring*, not common

A HISTORY OF HERTFORDSHIRE

DASCILLIDÆ

- Dascillus cervinus*, L. *Aldbury*, rather plentiful on the hills about the village
Helodes minuta, L. *Tring*
Microcara livida, F. Near *Bovingdon*, in a moist wood
Cyphon coarctatus, Payk. *Tring*
 — *nitidulus*, Thoms. *Tring*; *New Barnet* (Newbery)
 — *variabilis*, Thunb. } *Tring*
 — *padi*, L. }
Prionocyphon serricornis, Müll. *Felden* (Piffard)
Scirtes hemisphæricus, L. *Wilstone*, scarce, by the reservoir

MALACODERMIDÆ

LAMPYRINA

- Lampyris noctiluca*, L. *Tring* and *Aldbury*; the females are constantly met with in dead leaves and moss in winter, and I have occasionally seen the males fly in some numbers to a lamp when sugaring for *Lepidoptera*
Phosphæus hemipterus, Geoff. *Felden* (Piffard); this species was at one time considered to be an accidental introduction to these islands, and it has only been found in two or three localities in *Sussex*; Mr. Piffard's capture is most interesting as an additional proof of the fact, now accepted, that this insect may be regarded as indigenous

TELEPHORINA

- Telephorus fuscus*, L. *Hertford*, abundantly (Stephens)
 — *rusticus*, Fall. }
 — *lividus*, L. } *Tring*
 — *pellucidus*, F. }
 — *nigricans*, Müll. }
 — *lituratus*, F. }
 — *bicolor*, F. *Tring*; *New Barnet* (Newbery)
 — *hæmorrhoidalis*, F. *Tring*, fairly common
 — *flavilabris*, Fall. *Wilstone*, common, at the reservoir
 — *thoracicus*, Ol. *Wilstone*, scarce, at the reservoir
Rhagonycha fuscicornis, Ol. *Tring*; *New Barnet* (Newbery); *Hertford* (Stephens)
 — *fulva*, Scop. *Tring*, very common in July
 — *limbata*, Thoms }
 — *pallida*, F. } *Tring*
Malthinus punctatus, Fourc. }
 — *fasciatus*, Ol. *Tring*, rather common
 — *balteatus*, Suffr. *Aldbury*, rare

TELEPHORINA (continued)

- Malthodes marginatus*, Latr. } *Tring*
 — *minimus*, L. }
 — *fibulatus*, Kies. *Tring*, not uncommon in some of the woods
 — *atomus*, Thoms. *Wilstone*, scarce

MELYRINA

- Malachius bipustulatus*, L. *Tring*; *New Barnet* (Newbery)
 — *viridis*, F. *Puttenham*, scarce, by the canal
Axinotarsus ruficollis, Ol. *Hertford* (Stephens)
Anthocomus fasciatus, L. *Miswell*, rare; *Hertford* (Stephens)
Dasytes ærosus, Kies. *Hastoe*
Phlæophilus edwardsi, Steph. *Aldbury* Common, rare, one knocked off an old oak bough; *Ashbridge* (Piffard)

CLERIDÆ

- Tillus elongatus*, L. *Hemel Hempstead* (Piffard); *Hertford* (Stephens)
 — *unifasciatus*, F. *Hertford* (Stephens)
Necrobia ruficollis, F. *Tring*, rare, in dry horse's skin
 — *violacea*, L. *Tring*, with the preceding
Corynetes cæruleus, De G. *Tring*, occasionally seen in old houses; *Hertford* (Stephens)

PTINIDÆ

PTININA

- Niptus hololeucus*, Fald. *Tring*, scarce, as far as I know, in the town
 — *crenatus*, F. *Baldock*, one in a nasturtium flower (Wood)
Hedobia imperialis, L. *Tring*, *Duckmore Lane*, etc., frequently to be found, in and flying about old hedges; *Hertford* (Stephens)

ANOBIINA

- Dryophilus pusillus*, Gyll. *Hastoe*, not common, in fir plantation
Priobium castaneum, F. } *Tring*
Anobium domesticum, Fourc. }
 — *fulvicorne*, Sturm. *Tring*, rare, in old hedges
 — *paniceum*, L. *Tring*, frequently seen in the house. This species seems to be one of the most omnivorous of insects. I have seen poisonous drugs, such as aconite root, infested and spoilt by it, and it is not deterred by hot aromatic substances, as the rhizome of ginger and capsicum fruits
Ernobius mollis, L. *Tring*, scarce; *New Barnet* (Newbery)

INSECTS

ANOBIINA (*continued*)

- Ptilinus pectinicornis*, L. *Miswell* and *Aldbury*
Ochina hederæ, Müll. *Boxmoor* (Piffard)
Xyletinus ater, Panz. *Hertford* (Stephens)
Dorcatoma chrysomelina, Sturm. } *Cassiobury Park*,
— *flavicornis*, F. } *Watford* (Lewcock)

LYCTIDÆ

- Lyctus canaliculatus*, F. *Aldbury Common*, in oak fence

CISSIDÆ

- Cis boleti*, Scop. *Tring*, very common
— *micans*, F. *Wilstone*, very rare, in fungus on ash tree
— *hispidus*, Payk. *Tring*
— *bidentatus*, Ol. *Aldbury*, scarce, under bark of beech
— *alni*, Gyll. *Tring* and *Aldbury*, frequently found under beech bark
— *nitidus*, Herbst. *Tring*
— *pygmæus*, Marsh. *Tring*, scarce
— *festivus*, Panz. *Aldbury*, once found in numbers under bark of a recently fallen beech tree
— *vestitus*, Mell. *Felden* (Piffard)
Ennearthron affine, Gyll. *Hastoe*, rare
Octotemnus glabriculus, Gyll. *Tring*

CERAMBYCIDÆ

PRIONINA

- Prionus coriarius*, L. *Hertford* and *Broxbourne* (Stephens)

CERAMBYCINA

- Aromia moschata*, L. *Wilstone*, scarce, in old willows by the reservoir
Hylotrupes bajulus, L. *Hertford* (Stephens)
Callidium violaceum, L. *Tring*, very abundant in summerhouse built of fir wood; *New Barnet* (Newbery)
Callidium variabile, L. }
— *alni*, L. } *Hertford* (Stephens)
Clytus arcuatus, L. }
— *arietis*, L. *Hastoe*, not common
Gracilia minuta, F. *Tring*, found crawling on a wall in the town
Obrium cantharinum, L. *Broxbourne* (Stephens)
Molorchus minor, L. *Hertford* (Stephens)
Rhagium inquisitor, F. *Tring*, rare
Toxotus meridianus, Panz. *Tring*, not uncommon
Pachyta collaris, L. }
Leptura livida, F. } *Hertford* (Stephens)
Strangalia armata, Herbst. *Brown's Lane*, *Hastoe*, not common
— *melanura*, L. *Aldbury*, rare
Grammoptera ruficornis, F. *Tring*

LAMIINA

- Leiopus nebulosus*, L. *Bovingdon*, one specimen only
Pogonochærus bidentatus, Thoms. *Miswell*
— *dentatus*, Fourc. *Miswell*; have taken this and the preceding species sparingly in old hawthorn hedge
Tetrops præusta, L. *Puttenham*, rare, in hawthorn blossom
Phytoecia cylindrica, L. *Hertford* (Fowler)

BRUCHIDÆ

- Bruchus cisti*, F. *Aldbury*, usually common on *Helianthemum vulgare*
— *canus*, Germ. *Miswell*, rare, two examples on *Onobrychis sativa*
— *rufimanus*, Boh. *Tring*, occasionally taken by sweeping
— *loti*, Payk. *Hertford* (Stephens)
— *villosus*, F. *Wigginton*, rare

CHRYSOMELIDÆ

EUPODA

- Donacia dentata*, Hoppe. *Hertford* (Stephens)
— *versicoloreæ*, Brahm. *Wigginton*, found in several ponds on species of *Potamogeton*; somewhat later in appearing than most members of the genus (July and August)
— *spargani*, Ahr. *Miswell*, on *Sparganium ramosum*, growing by side of canal; *Watford* (Lewcock); *Boxmoor* (Piffard)
— *limbata*, Panz. *Miswell*, scarce
— *simplex*, F. *Wilstone*, *Little Tring*, etc.
— *vulgaris*, Zsch. *Miswell*, on *Typha latifolia*
— *semicuprea*, Panz. *Tring*, common on Carices, by side of canal at *Gammel*; *Hertford* (Stephens)
— *sericea*, L. *Tring*; *Watford* (Lewcock)
— *affinis*, Kunze. *Wilstone*, plentiful on Carices
Zeugophora subspinosæ, F. *Bricket Wood* (Piffard)
Lema cyanella, L. *Tring*, frequently found on *Cirsium arvense*
— *lichenis*, Voet. *Wilstone*, rather common about the reservoir
— *melanopa*, L. *Tring*, by no means common
Crioceris asparagi, L. *Tring*, common, in several gardens in the town on *Asparagus officinalis*

CAMPTOSOMATA

- Clythra quadripunctata*, L. *Hertford* (Stephens)
Cryptocephalus aureolus, Suffr. *Aldbury*, common some years in the flowers of *Hieracium pilosella*

A HISTORY OF HERTFORDSHIRE

CAMPTOSOMATA (*continued*)

- Cryptocephalus moræi*, L. *Tring*, scarce, on *Hypericum perforatum*
- *fulvus*, Goeze. *Wilstone*, rare
- *frontalis*, Marsh. *Chipperfield* (Piffard)
- *labiatus*, L. *Tring*

CYCLICA

- Lamprosoma concolor*, Sturm. *Tring*, rare
- Timarcha tenebricosa*, F. *Tring*, very common. This species is certainly attached to species of *Galium*; I have repeatedly noticed the larvæ feeding on *Galium mollugo*, in hedgerows near the town
- *violaceonigra*, De G. *Aldbury*, not very common
- Chrysomela marginalis*, Duft. *Aldbury*, very scarce, on *Linaria vulgaris*
- *staphylea*, L. *Tring* and *Hastoe*
- *polita*, L. *Tring*, very common. Doubtless this insect prefers to feed on various Labiate plants. I have found it, both as larvæ and imago, swarming on *Mentha aquatica* in marshy spots, and on *Origanum vulgare* in dry chalky situations
- *varians*, Schall. *Tring*
- *goettingensis*, L. *Wigginton*, one only, walking on roadway
- *didymata*, Scriba. *Hertford* (Stephens); *Baldock* (Wood)
- *hyperici*, Forst. *Tring*, on *Hypericum perforatum*
- Phytodecta rufipes*, De G. *Hastoe*, on willow bushes
- Gastroidea viridula*, De G. } *Tring*
- *polygoni*, L. }
- Plagiodera versicolora*, Laich. *Elstree* (Piffard)
- Phædon tumidulus*, Germ. } *Tring*
- *armoraciæ*, L. }
- *cochleariæ*, F. *Wilstone*, common, at the reservoir
- Phyllodecta vulgatissima*, L. *Hastoe*; *Baldock* (Wood)
- *cavifrons*, Thoms. *Hastoe*, rare, on *Populus tremula*
- *vittelinæ*, L. *Wilstone*; *New Barnet* (Newbery)
- Hydrothassa aucta*, F. *Aldbury*, very rare
- *marginella*, L. *Wilstone*, scarce, at the reservoir
- Prasocuris junci*, Brahm. *Wilstone*; *Two Waters* (Piffard)
- *phellandrii*, L. *Tring*
- Luperus nigrofasciatus*, Goeze. *Shrub Hill Common* (Piffard)
- *rufipes*, Scop. *Bricket Wood* (Lewcock)
- Lochmæa capreæ*, L. *Tring*; *Baldock* (Wood)

CYCLICA (*continued*)

- Lochmæa suturalis*, Thoms. *Aldbury* and *Wigginton Commons*, on *Calluna vulgaris*; *Bricket Wood* (Piffard)
- *cratægi*, Forst. *Tring*
- Galerucella viburni*, Payk. *Tring*, rare, on *Viburnum opulus*
- *nympheæ*, L. *Wilstone*, rare
- *sagittariæ*, Gyll. *Wilstone*, plentiful in marshy spots by the reservoir; have seen six or seven hibernating together in one dead reed stem
- *tenella*, L. *Wilstone*, on *Spiræa* growing by the reservoir
- Sermyla halensis*, L. *Tring*
- Longitarsus pulex*, Schrank. *Aldbury*; *Hoddy Hill*, *Wigginton*; common some years on *Thymus serpyllum*
- *anchusæ*, Payk. *Little Tring*
- *holsaticus*, L. *Wilstone*
- *quadriguttatus*, Pont. *Hertford* (Stephens)
- *luridus*, Scop. *New Barnet* (Newbery); *Tring*, very common, and extremely variable as to colour, a light testaceous form being very often met with on the hills, and a very dark (almost black) variety which occurs more often in damp situations
- *brunneus*, Duft. *Tring*
- *agilis*, Rye. *Baldock*, one specimen only (Wood)
- *suturellus*, Duft. *Tring*, fairly common on various species of *Senecio*
- *atricillus*, L. *Tring*, common, and apparently fond of Labiate plants as well as Leguminous ones
- *melanocephalus*, All. *Tring*
- *atriceps*, Kuts. *Tring*; I have one or two specimens captured near the town, which Mr. Champion believes belong to this species
- *distinguendus*, Rye. *Tring*, one specimen only
- *suturalis*, Marsh. *Wilstone*, rare, at the reservoir
- *nasturtii*, F. *Wilstone*
- *piciceps*, Steph. *Tring*, not uncommon on *Senecio Jacobææ* and *S. vulgaris*
- *waterhousei*, Kuts. *Wilstone* and *Little Tring*, by the reservoirs, on *Mentha aquatica*, on which plant I have also taken it in other localities
- *flavicornis*, Steph. *Little Tring*, one only
- *pusillus*, Gyll. *Tring*, common, and evidently by no means confined to wild thyme
- *tabidus*, F. Near *Hertford* and *Lewin*, on *Verbascum thapsus* (Stephens)

INSECTS

CYCLICA (*continued*)

- Longitarsus jacobææ*, Wat. } *Tring*
 — *ochroleucus*, Marsh. }
 — *gracilis*, Kuts. *Tring*, common on *Senecio Jacobææ*
 — *lævis*, Duft. *Tring*, common on many composite plants, as *Achillea*, *Chrysanthemum*, etc.
 — *pellucidus*, Foudr. *Tring*
Haltica lythri, Aubé. *Wilstone*, common at one spot by the reservoir on *Epilobium hirsutum*; *Baldock* (Wood)
 — *ericeti*, All. *Aldbury* and *Wiggington Commons*, on *Calluna vulgaris*
 — *ampelophaga*, Guér. *Bovingdon*, rare
 — *oleracea*, L. *Wilstone*; what I believe to be this species is common at the reservoir on *Epilobium hirsutum*
 — *pusilla*, Duft. *Tring* and *Aldbury*, common almost everywhere on the chalk hills
Hermæophaga mercurialis, F. *Tring*, on *Mercurialis perennis* at many spots in the district; *Hertford* (Stephens)
Phyllotreta nodicornis, Marsh. *Aldbury*, scarce, on *Reseda lutea*
 — *nigripes*, F. }
 — *consobrina*, Curt. } *Tring*
 — *punctulata*, Marsh. }
 — *atra*, Payk. }
 — *cruciferæ*, Goeze }
 — *vittula*, Redt. Near *Wilstone*, in a watercress bed
 — *undulata*, Kuts. } *Tring*
 — *nemorum*, L. }
 — *ochripes*, Curt. *Bovingdon*, on *Erysimum alliaria*
 — *exclamationis*, Thunb. *Wilstone*, scarce, at the reservoir
Aphthona nonstriata, Goeze. *Wilstone*, rather scarce, on *Iris*, at the reservoir
 — *venustula*, Kuts. *Tring*, in several of the woods, on *Euphorbia amygdaloides*
 — *atratura*, All. *Aldbury*, on *Helianthemum vulgare*
 — *atrocæruleæ*, Steph. *Tring*
 — *herbigrada*, Curt. *Tring*, very plentiful on the chalk hills
Batophila rubi, Payk. *Tring*; *Baldock* (Wood)

CYCLICA (*continued*)

- Batophila ærata*, Marsh. *Wilstone*, rare, in a hedge
Sphæroderma testaceum, F. }
 — *cardui*, Gyll. } *Tring*
Apteropeda orbiculata, Marsh. }
Mniophila muscorum, Koch. Near *Flaunden*, in a wood
Mantura rustica, L. *Tring*, very scarce
 — *matthewsi*, Curt. *Aldbury*, not uncommon on *Helianthemum vulgare*; *Snotbanger Common* (Piffard)
Crepidodera transversa, Marsh. *Wilstone*, common, by the reservoir
 — *ferruginea*, Scop. } *Tring*
 — *rufipes*, L. }
 — *nitidula*, L. *Kings Langley* (Piffard)
 — *helxines*, L. *Hastoe*; *Bricket Wood* (Lewcock)
 — *chloris*, Foudr. Near *Hadley Wood* (Newbery)
 — *aurata*, Marsh. *Hastoe*
 — *smaragdina*, Foudr. Near *Bovingdon*
Hippuriphila modeeri, L. *Wilstone*, common at one spot by the reservoir, in moss
Epitrix atropæ, Foudr. *Tring*, on *Atropa Belladonna*; *Felden* (Piffard)
Chætocnema hortensis, Fourc. *Tring*
 — *confusa*, Boh. *Felden* (Piffard)
Plectroscelis concinna, Marsh. }
Psylliodes napi, Koch. } *Tring*
 — *cupræa*, Koch. }
 — *affinis*, Payk. *Tring*; *New Barnet* (Newbery)
Psylliodes chalcomera, Ill. *Aldbury*, scarce, on *Cirsium arvense*
 — *picina*, Marsh. *Little Tring*, rare

CRYPTOSOMATA

- Cassida vibex*, F. *Aldbury*, rare, on thistles; *Hertford* (Stephens)
 — *nobilis*, L. *Tring*
 — *flaveola*, Thunb. *Wilstone*; *Hertford* (Stephens)
 — *equestris*, F. *Wilstone* and *Little Tring*, rather common on *Mentha aquatica*, at the first of these two localities
 — *viridis*, F. *Tring*
 — *hemisphærica*, Herbst. *Tring*, one specimen taken by Mr. J. W. Shipp

HETEROMERA

TENEBRIONIDÆ

- Blaps mucronata*, Latr. *Tring*
 — *similis*, Latr. *Hertford* (Stephens)
Heledona agaricola, F. *Asbridge* (Piffard)

- Scaphidema metallicum*, F. *Tring*; *Shrub Hill Common* (Piffard)
Tenebrio molitor, L. *Tring*
 — *obscurus*, F. *Tring*, rare
Tribolium ferrugineum, F. *Hertford* (Stephens)

A HISTORY OF HERTFORDSHIRE

- Palorus melinus*, Herbst. *Baldock* (Wood)
Hypophloeus bicolor, Ol. *Berkhamsted* (Piffard)
Helops coeruleus, L. *Tring*, very rare; a pair were taken by Mr. J. W. Shipp, in the town
 — *striatus*, Fourc. *Tring*, not common

CISTELIDÆ

- Cistela luperus*, Herbst. *Tring* and *Aldbury*; *Hertford* (Stephens)
 — *ceramoides*, L. *Hertford* (Stephens)
 — *murina*, L. *Tring*

LAGRIDÆ

- Lagria hirta*, L. *Tring*, somewhat common

MELANDRYIDÆ

- Tetratoma desmaresti*, Latr. *Aldbury* Common, four specimens under bark of oak impregnated with fungoid growths; *Felden* (Piffard)
 — *ancora*, F. *Tring*, very rare, one beaten from dead oak bough
Orchesia micans, Panz. *Wilstone*. I have bred this insect in great numbers from a large brown fungus, growing on old ash tree
Clinocara tetratoma, Thoms. *Tring*, several seen under holly bark in Pavis Wood, all but one however managed to escape
Hallomenus humeralis, Panz. Near *Flaunden*, two or three found, under rotten wood; *Baldock*, about thirty in a decaying pine (Wood)
Conopalpus testaceus, Ol. *Tring*; I have bred this species from rotten oak boughs, the perfect insect appearing in the latter half of June; *Felden* (Piffard); *Hertford* (Stephens)
Phlæotrya rufipes, Gyll. *Felden* (Piffard)

PYTHIDÆ

- Salpingus castaneus*, Panz. *Felden* (Piffard)
Lissodema quadripustulata, Marsh. *Tring*, frequently met with in beating old hedges; *Hertford* (Stephens)
Rhinosimus ruficollis, L. *Tring*
 — *viridipennis*, Steph. *Tring*, very scarce
 — *planirostris*, F. *Tring*

OEDEMERIDÆ

- Oedemera lurida*, Marsh. *Tring*, occasionally seen, in grassy uncultivated places

PYROCHROIDÆ

- Pyrochroa serraticornis*, Scop. *Tring*

MORDELLIDÆ

- Mordella aculeata*, L. *Hertford* (Stephens)
Mordellistena abdominalis, F. *Sbothanger* Common (Piffard)
 — *humeralis*, L. *Tring*, very rare
 — *brunnea*, F. *Tring*, very rare, one specimen beaten out of hedge in the *Shire Lane*
 — *pumila*, Gyll. *Tring*; *Hertford* (Stephens)
 — *brevicauda*, Boh. *Tring*, rare
Anaspis frontalis, L. *Tring*
 — *garneysi*, Fowler. *Baldock* (Wood)
 — *pulicaria*, Costa. *Tring*, rather common, especially on *Umbelliferæ*
 — *rufilabris*, Gyll. *Tring*
 — *geoffroyi*, Müll. *Tring*, common; *Hertford* (Stephens)
 — *ruficollis*, F. *Tring*, common, in moist situations; *New Barnet* (Newbery)
 — *subtestacea*, Steph. *Tring*
 — *maculata*, Fourc. *Tring*, very common. I have found the larvæ in the hollow stems of *Clematis vitalba*, in winter; *New Barnet* (Newbery)

ANTHICIDÆ

- Anthicus floralis*, L. *Tring*; *New Barnet* (Newbery)
 — *antherinus*, L. *Tring*, rather common; *New Barnet* (Newbery)

MELOIDÆ

- Meloe violaceus*, Marsh. *Tring*, scarce; *Baldock*, one only (Wood)
 — *proscarabæus*, L. *Tring*; this species seems to feed very voraciously in the perfect state. I once watched a well-developed female devour two or three leaves of *Ranunculus repens* in quite a short time

ANTHRIBIDÆ

- Brachytarsus fasciatus*, Forst. *Hertford* (Stephens); *Baldock* (Wood)
Choragus sheppardi, Kirby. *Miswell* near *Tring*, once found in some numbers, in an old hedge

CURCULIONIDÆ

ATTELABINA

- Apoderus coryli*, L. *Tring*, rare, on hazel at *Bishop's Wood*; *Baldock*, one specimen (Wood)
Attelabus curculionides, L. *Hastoe*, rare, in *Brown's Lane*

RHYNCHITINA

- Byctiscus populi*, L. *Bricket Wood* (Piffard)
Rhynchites æquatus, L. *Aldbury*, not common

INSECTS

RHYNCHITINA (*continued*)

- Rhynchites æneovirens, Marsh. *Hastoe*, scarce, in *Brown's Lane*; *Bricket Wood* (Lewcock); *Hertford* (Stephens)
- minutus, Herbst. *Tring*
- nanus, Payk. *Hertford* (Stephens)
- uncinatus, Thoms. *Bricket Wood* (Lewcock)
- sericeus, Herbst. *Tring*, very rare, on hazel
- pubescens, F. *Tring* (Piffard)
- Deporaus megacephalus, Germ. Near *Bovingdon*, rare; *Bricket Wood* (Lewcock)
- betulæ, L. *Tring*, of occasional occurrence, in the beech woods

APIONINA

- Apion pomonæ, F. *Tring*, rare; *Hertford* (Stephens)
- craccæ, L. *Miswell*
- ulicis, Forst. *Tring*, usually found wherever the furze grows
- miniatum, Germ. *Aldbury* and *Wilstone*, not common
- hæmatodes, Kirby. *Tring* and *Hastoe*
- pallipes, Kirby. *Tring*, rather common, on *Mercurialis perennis*
- difforme, Germ. *Tring*
- varipes, Germ. *Tring*, rare
- apicans, Herbst. *Tring*
- assimile, Kirby. *Tring*; *New Barnet* (Newbery)
- trifolii, L. } *Tring*
- dichroum, Bedel. } *Tring*
- nigrirtarse, Kirby } *Tring*
- confluent, Kirby. *Aldbury*, on *Matricaria inodora*, very rare
- stolidum, Germ. *Bushey* (Fowler, *British Coleoptera*, vol. v.)
- æneum, F. *Tring*, scarce, on *Malva rotundifolia*
- radiolus, Kirby } *Tring*
- onopordi, Kirby } *Tring*
- carduorum, Kirby } *Tring*
- vicinum, Kirby. *Wilstone*, rare, on *Mentha aquatica* at the reservoir
- atomarium, Kirby. *Aldbury*, not uncommon, at the roots of *Thymus serpyllum*
- minimum, Herbst. *Baldock*, common, on *sallow* (Wood)
- virens, Herbst. } *Tring*
- punctigerum, Payk. } *Tring*
- pisi, F. } *Tring*
- æthiops, Herbst. *Wilstone*, not common; *New Barnet* (Newbery); *Baldock* (Wood)
- ebeninum, Kirby. *Aldbury*, not common; *Felden* (Piffard)
- striatum, Kirby. *Hastoe* and *Wigginton*

APIONINA (*continued*)

- Apion spencei, Kirby. *Aldbury*
- ervi, Kirby. *Tring*
- vorax, Herbst. *Tring*, not common
- unicolor, Kirby. *Wilstone*, scarce; *New Barnet* (Newbery)
- scutellare, Kirby. *Felden* (Piffard)
- livescerum, Gyll. *Tring*, may be found in most fields of *sainfoin* (*Onobrychis sativa*); *Felden* (Piffard)
- waltoni, Steph. *Aldbury*, not uncommon
- loti, Kirby. *Tring*; *Baldock* (Wood)
- seniculum, Kirby } *Tring*
- tenue, Kirby } *Tring*
- simile, Kirby. *Hertford* (Stephens)
- pubescens, Kirby. *Wilstone* and *Aldbury*, scarce
- marchicum, Herbst. *Hastoe*, rare, in *Brown's Lane*
- affine, Kirby. *Felden* (Piffard)
- violaceum, Kirby } *Tring*
- hydrolapathi, Kirby } *Tring*
- humile, Germ. *Tring*; *New Barnet* (Newbery)

OTIORRHYNCHINA

- Otiorrhynchus tenebricosus, Herbst. *Aldbury*
- fuscipes, Walton. *Tring*, rare
- raucus, F. *Baldock*, one only (Wood)
- scabrosus, Marsh. *Tring*
- ligneus, Ol. *Aldbury*; *Baldock*, common in greenhouse (Wood)
- sulcatus, F. *Tring*, occasionally seen in gardens; *Baldock* (Wood)
- ovatus, L. *Aldbury*
- Trachyphloeus aristatus, Gyll. *Tring*, rare, at roots of *Helianthemum*
- squamulatus, Ol. *Aldbury*, at the roots of *Helianthemum vulgare*; *Shothanger Common* (Piffard)
- scabriculus, L. *Tring*
- alternans, Gyll. *Miswell*, rare
- Strophosomus coryli, F. *Tring*
- retusus, Marsh. *Wigginton Common*, rare
- faber, Herbst. *Wilstone*, rare, in moss by the reservoir
- lateralis, Payk. *Aldbury Common*, on *Calluna vulgaris*
- Exomias araneiformis, Schrank. *Tring*; *Hadley Wood* (Newbery)
- ¹ Brachysomus echinatus, Bousd. *Tring*, rather common, on banks and in hedgerows

¹ B. hirtus, Boh., which was at one time considered so rare an insect, is almost sure to be found in the county; it should be looked for in newly fallen leaves, in sheltered woods, during October and November; it occurs commonly in several of the woods round Chesham, and quite close to the Herts border.

A HISTORY OF HERTFORDSHIRE

OTIORRHYNCHINA (continued)

- Sciaphilus muricatus*, F. *Tring*
Tropiphorus tomentosus, Marsh. *Tring*,
 very rare
Liophloeus nubilus, F. *Tring*, not common
Metallites marginatus, Steph. *Chipperfield*
 (Piffard); *Bricket Wood* (Lewcock)
Polydrusus micans, F. *Tring*, rather com-
 mon on beech, on which tree it
 seems to appear as soon as the buds
 expand in spring; *Felden* (Piffard)
 — *tereticollis*, De G. *Tring*; *Kings*
Langley (Piffard)
 — *pterygomalis*, Boh. } *Tring*
 — *cervinus*, L. }
Phyllobius oblongus, L. } *Tring*
 — *calcaratus*, F. *Tring*, scarce
 — *urticæ*, De G. } *Tring*
 — *pyri*, L. }
 — *argentatus*, L. }
 — *maculicornis*, Germ. *Tring*, not com-
 mon
 — *pomonæ*, Ol. } *Tring*
 — *viridiæris*, Laich. }
 — *viridicollis*, F. *Aldbury*, plentiful some
 years near this village; possibly this
 is the most southern locality for this
 insect in Britain; *Tring Hills*
 (Piffard); *Baldock* (Wood)
¹ *Barynotus obscurus*, F. *Tring*; *Baldock*
 (Wood)
 — *schonherri*, Zett. *Baldock* (Wood)
 — *elevatus*, Marsh. *Tring*, commoner
 than *obscurus*, round this town,
 where it may often be seen feeding
 upon *Mercurialis perennis*; *Felden*
 (Piffard); *Baldock* (Wood)

CURCULIONINA

- Sitones cambricus*, Steph. *Hertford* (Ste-
 phens)
 — *regensteiniensis*, Herbst. *Wigginton*
Common
 — *crinitus*, Herbst. *Tring*, common, in
 chalky places
 — *tibialis*, Herbst. } *Tring*
 — *hispidulus*, F. }
 — *humeralis*, Steph. *Aldbury*, not common
 — *flavescens*, Marsh. } *Tring*
 — *puncticollis*, Steph. }
 — *suturalis*, Steph. } *Tring*; *New Barnet*
 — *lineatus*, L. } (Newbery)
 — *sulcifrons*, Thunb. *Wilstone*, in moss,
 by the reservoir
Hypera punctata, F. *Tring*, not common
 — *rumicis*, L. *Wilstone*
 — *polygoni*, L. *Aldbury*
 — *variabilis*, Herbst. } *Tring*
 — *plantaginis*, De G. }

¹ The Rev. T. Wood captured all three species of the genus, by sweeping at night.

CURCULIONINA (continued)

- Hypera trilineata*, Marsh. *Aldbury*, scarce
 — *nigrirostris*, F. *Tring*. I have a
 couple of the very distinct var.
ononinis (Stevens) taken on *Aldbury*
Owers
Cleonus sulcirostris, L. *Hertford* (Ste-
 phens)
Liosoma ovatum, Clairv. *Tring*
 — *oblongulum*, Boh. *Kings Langley*
 (Piffard)
Liparus coronatus, Goeze. *Tring*, rare,
 once taken in *Miswell Lane*
Hylobius abietis, L. *Tring*, rare; *Hertford*
 (Stephens)
Orchestes quercus, L. *Tring*, not com-
 mon; *New Barnet* (Newbery)
 — *alni*, L. *Little Tring*; *Bricket Wood*
 (Lewcock); *New Barnet* (Newbery)
 — *ilicis*, F. *Aldbury Common*, rare, on oak
 — *avellanæ*, Don. *Hastoe*, rare, on hazel
 — *fagi*, L. *Tring*, to be found in great
 abundance everywhere in the beech
 woods
 — *pratensis*, Germ. *Hertford* (Stephens)
 — *rusci*, Herbst. *Kings Langley* (Piffard)
 — *salicis*, L. *Tring*, not common
Rhamphus flavicornis, Clairv. *Tring*
Procas armillatus, F. *Felden* (Piffard)
Orthochætes setiger, Beck. *Aldbury*;
Hertford (Stephens)
Grypidius equiseti, F. *Chipperfield* (Piffard);
Hertford (Stephens)
Erirrhinus bimaculatus, F. *Wilstone*, rare,
 at the reservoir; *Langley* (Piffard)
 — *acridulus*, L. *Tring* and *Wilstone*
Thryogenes festucae, Herbst. *Miswell*,
 scarce, on the canal
 — *nercis*, Payk. *Wigginton*, not uncom-
 mon on species of *Carex*, at side of a
 pond
Dorytomus tremulæ, F. *Kings Langley*
 (Piffard)
 — *tortrix*, L. *Wilstone*, not uncommon
 on *Populus alba*, growing near the
 village
 — *validirostris*, Gyll. *Kings Langley*
 (Piffard)
 — *maculatus*, Marsh. *Tring*; the var.
costirostris occurs with it
 — *melanophthalmus* (Payk.), var. *agnathus*,
 Boh. *Bushey Common* (Piffard)
Tanysphyrus lemnæ, F. *Wilstone*, not un-
 common, in refuse on the reservoir
 banks
Bagous alismatis, Marsh. *Hastoe*, on
Alisma plantago, on pond bank;
Chipperfield (Piffard)
 — *limosus*, Gyll. *Wilstone*, very rare, in
 refuse, by the reservoir

INSECTS

CURCULIONINA (*continued*)

- Bagous frit, Brit. Coll. *Wilstone*, rare, with the preceding
 — lutosus, Gyll. *Hertford* (Stephens)
 Anoplus plantaris, Naez. *Tring*
 Elleschus bipunctatus, L. *Hastoe*, once found plentifully on sallow in *Brown's Lane*
 Tychius squamulatus, Gyll. *Aldbury*, rare
 — meliloti, Steph. *Wilstone*, not common on *Melilotus officinalis*
 — lineatulus, Steph. *Aldbury*, very rare, on *Anthyllis vulneraria*
 — junceus, Reich. *Tring* and *Aldbury*
 — tomentosus, Herbst. *Baldock* (Wood)
 — pygmaeus, Bris. *Boxmoor* (Piffard)
 Miccotrogus picirostris, F. *Tring*
 Sibinia primita, Herbst. Near *Bovingdon*; *Felden* (Piffard)
 Miarus campanulae, L. *Aldbury*, in the flowers of *Campanula glomerata*, on the hills near the village
 — graminis, Gyll. *Aldbury*, scarce with the preceding; *Hertford* (Stephens)
 — plantarum, Germ. *Aldbury*, one specimen by sweeping, probably on *Campanula glomerata*
 Gymnetron beccabungae, L. *Miswell* and *Little Tring*, on *Veronica beccabunga*
 — melanarius, Germ. *Tring*, scarce, on *Veronica chamaedrys* in dry chalky places
 — antirrhini, Payk. *Tring* and *Aldbury*, not uncommon, on *Linaria vulgaris*
 Mecinus pyraeter, Herbst. *Tring*
 Anthonomus ulmi, De G. *Tring*, rare
 — rosinae, Des Gozis. *Tring*, rare, in a hawthorn hedge
 — pedicularius, L. } *Tring*
 — rubi, Herbst. }
 — comari, Crotch. *Bricket Wood* (Lewcock)
 Cionus scrophulariae, L. *Tring*
 — tuberculosus, Scop. *Hertford* (Stephens)
 — thapsus, F. *Aldbury*, on *Scrophularia nodosa*
 — hortulanus, Marsh. *Tring*
 — blattariae, F. *Tring*; *Hertford* (Stephens)
 — pulchellus, Herbst. *Tring*; *Hertford* (Stephens); *Baldock* (Wood)
 Orobitis cyaneus, L. *Tring*, single specimens have frequently occurred; *Felden* (Piffard)
 Acalles roboris, Curtis. *Kings Langley* (Piffard); *Hertford* (Stephens)
 — ptinoides, Marsh. *Tring*, very frequently found among dead beech twigs on the ground; *Felden* (Piffard); *Hertford* (Stephens)

CURCULIONINA (*continued*)

- Acalles turbatus, Boh. *Miswell*, once found sparingly in an old hedge; *Felden* (Piffard)
 Coeliodes rubicundus, Herbst. *Bovingdon*, rare, once found on oaks; *Kings Langley* (Piffard)
 — quercus, F. *Tring*
 — ruber, Marsh. *Hastoe*, rare, in *Brown's Lane*
 — cardui, Herbst. *Tring*, common, especially in the spring
 — quadrimaculatus, L. *Tring*, abundant everywhere
 Poophagus sisymbryii, F. *Tring*
 — nasturtii, Germ. *Wilstone*, very rare, in refuse by the reservoir; *Baldock*, found commonly (Wood)
 Ceuthorrhynchus assimilis, Payk. *Tring*
 — setosus, Boh. *Bushey* (Fowler)
 — constrictus, Marsh. *Hastoe*, rare, in *Brown's Lane*
 — cochleariae, Gyll. *Wilstone*
 — ericae, Gyll. *Aldbury* Common, plentiful; *Asbridge* (Piffard)
 — erysimi, F. *Tring*
 — contractus, Marsh. *Tring*; near *Hadley Wood* (Newbery)
 — chalybaeus, Germ. *Tring* and *Aldbury*
 — quadridens, Panz. } *Tring*
 — pollinarius, Forst. }
 — pleurostigma, Marsh. }
 — alliaria, Bris. *Boxmoor* (Piffard)
 — marginatus, Payk. *Miswell*, rare
 — (rotundatus, Bris.). *Boxmoor*, on the railway bank (Piffard)
 — urticae, Boh. *Tring*, a few specimens on *Stachys sylvatica*, in rather moist spot in a wood
 — rugulosus, Herbst. *Little Tring*, rare, in a damp meadow
 — melanostictus, Marsh. *Wilstone*, not uncommon on *Mentha aquatica*, at the reservoir
 — asperifoliarum, Gyll. *Tring*; *Baldock* (Wood)
 — euphorbiae, Bris. *Aldbury*, very rare, one example on *Veronica chamaedrys*
 — litura, F. *Tring*; *New Barnet* (Newbery)
 — trimaculatus, F. } *Tring*
 Ceuthorrhynchidius floralis, Payk. }
 — pyrrhorhynchus, Marsh. }
 — nigrinus, Marsh. *Aldbury* and *Little Tring*
 — melanarius, Steph. *Wilstone*, on *Nasturtium officinale*
 — horridus, F. *Tring*, very local on the hills, feeding upon *Cirsium arvense*
 — quercicola, Payk. *Aldbury* and *Tring*

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CURCULIONINA (*continued*)

- Ceuthorrhynchidius troglodytes*, F. *Tring*
 — *chevolati*, Bris. *Boxmoor*, on the rail-
 way bank (Piffard)
Amalus hæmorrhous, Herbst. Near *Bov-*
ingdon, scarce, in a clover field
Rhinonchus pericarpus, L. *Tring*; *New*
Barnet (Newbery)
 — *gramineus*, Herbst. *Wilstone*, rare, at the
 reservoir, on *Polygonum amphibium*
 — *perpendicularis*, Reich. } *Tring*
 — *castor*, F. }
Eubrychius velatus, Beck. *Wilstone*, at the
 reservoir
Litodactylus leucogaster, Marsh. *Wilstone*,
 with the preceding
Phytobius quadrituberculatus, F. *Tring*;
Hertford (Stephens)
 — *canaliculatus*, Fähr. *Wilstone*, rare, in
 refuse at the reservoir
 — *quadrinodosus*, Gyll.¹ *Aldbury*, one at
 the roots of *Thymus serpyllum*
Limnobaris T-album, L. *Wilstone*, rare,
 at the reservoir; *Kings Langley*
 (Piffard); *Hertford* (Stephens); *Bal-*
dock, common (Wood)
Balaninus nucum, L. *Bricket Wood* (Lew-
 cock)
 — *betulæ*, Steph. *Kings Langley* (Piffard)
 — *villosus*, F. *Bovingdon*; *Felden* (Piffard)
 — *salicivorous*, Payk. *Tring*; near *Hadley*
Wood (Newbery); *Bricket Wood*
 (Lewcock)
 — *pyrrhoceras*, Marsh. *Tring*
Magdalis armigera, Fourc. *Little Tring*,
 rare; near *Hadley Wood* (Newbery)
 — *pruni*, L. *Tring*

CALANDRINA

- Calandra granaria*, L. *Tring*, in granary
 — *oryzæ*, L. *Tring*, with the preceding

COSSONINA

- Cossonus ferrugineus*, Clairv. *Wilstone*,
 where I once found a considerable
 quantity of the dead remains of this
 insect, in a decaying elm
Rhyncolus lignarius, Marsh. *Tring*; *Hert-*
ford (Stephens)

SCOLYTIDÆ

- Scolytus destructor*, Ol. *Tring*

- Scolytus pruni*, Ratz. *Wilstone*, in decay
 ing plum tree
 — *rugulosus*, Ratz. *Tring*, rare; once
 caught on the wing; *New Barnet*
 (Newbery)
Hylastes ater, Payk. *Tring*
 — *opacus*, Er. *Wilstone*, rare, in old ash
 tree; *Hertford* (Stephens)
 — *palliatu*s, Gyll. *Hastoe*
Hylesinus crenatus, F. *Wilstone*, in decay-
 ing ash
 — *fraxini*, Panz. *Tring*
Myelophilus piniperda, L. *Tring*, one
 caught on a gatepost
Cissophagus hederæ, Schmidt. *Felden*
 (Piffard); *Baldock* (Wood)
Phlæophthorus rhododactylus, Marsh. *Shot-*
banger Common (Piffard)
Pityophthorus pubescens, Marsh. *Hertford*
 (Stephens)
Xylocleptes bispinus, Duft. *Tring*, usually
 common in *Clematis vitalba*
Dryocoetes villosus, F. *Bovingdon*
Trypodendron domesticum, L. *Tring*,
 frequently found in numbers, in
 dead beech
Xyleborus saxeseni, Ratz. *Felden* (Piffard)

ABNORMAL COLEOPTERA

STREPSIPTERA or STYLOPIDÆ

- Stylops melittæ*, Kirby. *Felden* (Piffard)

SUMMARY OF SPECIES

| | |
|--|-----|
| <i>Geodephaga</i> | 125 |
| <i>Hydradephaga</i> | 50 |
| <i>Palpicornia</i> | 40 |
| <i>Staphylinidæ</i> | 408 |
| <i>Clavicornia</i> | 313 |
| <i>Lamellicornia</i> | 38 |
| <i>Sternoxi</i> | 37 |
| <i>Malacoderma</i> | 34 |
| <i>Teredilia</i> | 26 |
| <i>Longicornia</i> | 23 |
| <i>Phytophaga</i> (with <i>Bruchidæ</i>) | 131 |
| <i>Heteromera</i> (with <i>Abnormal</i> <i>Coleoptera</i>) | 48 |
| <i>Rhyncophora</i> (with <i>Anthri-</i> <i>bidæ</i>) | 251 |

1,524

LEPIDOPTERA

Of the 2,061 species of *Lepidoptera* included in the British lists, 1,138, or rather more than half, have been observed in Hertfordshire. As might be anticipated, the group of insects commonly known as butterflies

¹ This species formerly stood in British collections as *Rhinonchus denticollis*, Gyll. (*Entomologists' Monthly Magazine*, vol. xxxv. p. 142.)

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has attracted the most general attention and has been the most widely observed, 50 of the 68 British species having been recorded. The census for the nine groups into which the order has been divided in Mr. Meyrick's *Handbook of British Lepidoptera* stands at present as under :—

| | British Species | Recorded for Herts |
|--------------------------|--------------------|--------------------------|
| Caradrinina | 378 | 221 |
| Notodontina | 326 | 229 |
| Lasiocampina | 18 | 15 |
| Papilionina | 68 | 50 |
| Pyrallidina | 187 | 87 |
| Psychina | 16 | 6 |
| Tortricina | 330 | 171 |
| Tineina | 720 | 344 |
| Micropterygina | 18 | 15 |
| Totals | 2,061 | 1,138 |

The order of proportionate representation, based upon these figures, is therefore as follows : *Lasiocampina* and *Micropterygina* (both of which are represented by 15 out of 18 British species), *Papilionina*, *Notodontina*, *Caradrinina*, *Tortricina*, *Tineina*, *Pyrallidina*, and *Psychina*. It must, however, be remembered that the smaller moths have received comparatively little attention, and that so far as they are concerned a large part of the county remains unexplored. Future investigations may, therefore, result in a re-arrangement of the above order.

In March, 1878, the Rev. C. M. Perkins, M.A., then head master of the St. Albans Grammar School, read a paper before the members of the Watford Natural History Society on 'British Butterflies,'¹ treating especially of the species which had been taken in the county. With the exception of Stephens' records this appears to have been the first important contribution to our knowledge of the insect fauna of Hertfordshire. The earliest recent attempt to compile anything like an exhaustive local list was, however, made in the winter of 1883-4 by Mr. Arthur Griffith, M.A., and in it he recorded the results of the observations and captures made by himself and his brother, Mr. F. Ll. Griffith. This list was published in the *Transactions of the Hertfordshire Natural History Society*.² Mr. Arthur Griffith and his brother are sons of the late Rev. John Griffith, LL.D., at that time vicar of Sandridge, and their collecting was done principally, though not wholly, in their father's parish, and extended over a district about six miles long and two miles wide. They succeeded in compiling a list of 514 species, 29 of which were butterflies. By the end of 1890³ this total had been increased to 832 species, including 266 *Tineina*, which group had not been dealt with in the earlier paper. This very considerable total for so comparatively restricted an area must be regarded as very creditable. Besides a large number of the Micro-Lepidoptera, the following insects have been re-

¹ *Trans. Watford Nat. Hist. Soc.*, vol. ii. p. 63.

² *Trans. Herts Nat. Hist. Soc.*, vol. iii. p. 58.

³ *Ibid.* vol. vi. p. 47.

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corded for Hertfordshire by Mr. Griffith only : *Hemaris bombylifformis*, *Pygæra curtula*, *Heliothis armigera*, *Leucophthalmia pendularia*, *Euchæca oblitterata*, *Tephroclystis plumbeolata*, *T. virgaureata*, *Calocalpe undulata*, and *Cataclysmæ virgata*. Especial mention must be made of Mr. Griffith's careful study of the 'pug' moths and their life history, he having recorded the occurrence of no less than 22 species.

The next published lists were those of Mr. John Hartley Durrant, F.E.S., of species observed in the neighbourhood of Hitchin and Knebworth.¹ He recorded 419 species, of which 106 were not included in Mr. Griffith's list, thus bringing the total for the county up to 938. The insects named in Mr. Durrant's Hitchin list were captured at Hitch Wood, Ickleford, Norton, Offley, Pegsdon, Ippolyts and Tingley Wood, and roughly speaking all his collecting was done on the Chalk or on the Boulder Clay or Drift overlying it. The species recorded by Mr. Durrant alone include *Procris geryon*, *Callimorpha dominula*, and *Heliothis peltigera*. Mr. Durrant also made a further valuable contribution to local entomological literature in a paper² read at Watford in 1888, which contained a large number of records gathered from various sources of species observed in the county. The majority of the records are collected from Stephens' *Illustrations of British Entomology (Haustellata)*, vols. i. to iv., ranging in date from 1828 to 1834, and I have made use of Mr. Durrant's paper in compiling my present list.

In the same year Mr. R. W. Bowyer, one of the masters at Haileybury School, published a list³ of the Macro-Lepidoptera which had been caught in that neighbourhood. This contained the names of 30 butterflies and 315 moths, and included some rare insects, such as *Lycæna arion* and *Catocala fraxini*. About the same time the Haileybury Natural Science Society issued a useful little work entitled *The Flora and Fauna of Haileybury*, part i. of which includes the Lepidoptera. This I have consulted in addition to Mr. Bowyer's catalogue and some additional notes and records supplied by Mr. C. H. Stockley, and it is referred to hereafter as the 'Haileybury School List.'

The Macro-Lepidoptera of south-west Herts have been very carefully investigated by the Watford entomologists, good work having been done in this direction by Mr. Arthur Cottam of Elderscroft, Mr. J. E. K. Cutts (formerly of Silverdell, Nascot Wood), Mr. S. H. Spencer, Mr. Noel Heaton, Mr. Wigg, and Mr. A. Stoyel. At Bushey Heath Mr. Philip J. Barraud has succeeded by means of a light trap in securing a number of rarities, among which may be mentioned *Orthosia suspecta* and *Plusia moneta*; and at Oxhey, which, like the last locality, is on the Middlesex border, Mr. H. Rowland-Brown, M.A., F.E.S., of Harrow Weald, has captured a number of interesting species.

The extensive tracts of woodland with which Hertfordshire abounds have proved fruitful hunting-grounds, prominent among them being Bricket Wood, about midway between St. Albans and Watford, and well known to the collectors resident in those two towns. Besides the

¹ *Trans. Herts Nat. Hist. Soc.*, vol. iii. p. 261.

² *Ibid.* vol. v. p. 63.

³ *Ibid.* vol. v. p. 23.

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large enclosures devoted to the cultivation of timber, there are here many acres of boggy ground clothed with a rough and luxuriant growth of tangled underwood and known as the Scrubs. The sallows, of which there are many on the railway banks at this spot, prove very attractive in the spring, especially to moths belonging to the genus *Monima*, and later in the year sugaring in the ridings or the outskirts of the woods often proves very remunerative. *Thyatira batis* sometimes comes freely to 'sugar' at Bricket, where I have seen nearly a score of specimens on one patch, while other captures here have included *Miltochrista miniata*, *Acronycta ligustri*, *Triphæna prasina*, *Leucania turca*, *Cybosia mesomella*, *Palimpsestis or*, *Tryphæna fimbria*, and *Orthosia aurago*. Among geometers to be taken here may be mentioned *Metrocampa dolobraria*, *M. pulveraria*, *Euchlæna prunaria*, *Diastictis consortaria*, *Ectropis biundularia* (*crepuscularia*), *E. luridata* (*extersaria*), *Leucophthalmia orbicularia*, and *Geometra papilionaria*. Some good things have also been obtained by larvæ-beating at Bricket Wood by Mr. Arthur Lewis, an enthusiastic St. Albans entomologist, and by myself.

The range of chalk downs known as the Chiltern Hills, which run across the north of Hertfordshire, enter the county on the west near Tring, and they possess a rich and distinctive insect fauna. This district and the adjoining parts of Buckinghamshire are famous for the beech trees which flourish and attain large dimensions on the outcrop of the Chalk beds. Extensive woods composed almost entirely of these trees are to be found in the neighbourhood of Tring, and are the homes of those species of Lepidoptera whose larvæ feed upon their foliage. On the grassy slopes of the downs, too, will be found many interesting insects whose presence is accounted for by the fact that their food plants abound in such situations. Thanks to the efforts of the Hon. Walter and the Hon. Charles Rothschild, Mr. A. T. Goodson, and especially of Mr. E. George Elliman, this district has been carefully explored so far as the butterflies and larger moths are concerned. The records of captures by Mr. E. J. Le Quesne and Mr. J. L. Foulkes were supplied by Mr. Elliman. Among the butterflies of the Tring district may be mentioned *Lycæna bellargus* (which also occurs at Royston), *L. corydon*, *Chrysophanus minimus*, *Thecla rubi*, and *Pamphila comma*. The moths include *Colocasia coryli*, *Metrocampa margaritaria*, *Ectropis consonaria*, *E. biundularia*, *Euchloris vernaria*, *Leucophthalmia trilinearia*, *L. annulata*, *Leptomeris ornata*, *Pseudopanthera punctata*, *Asthena murinata* (*euphorbiata*), *Hydriomena juniperata*, *Mysticoptera sexalisata*, *Plemyria galiata*, *Xanthorbæ bipunctaria*, *Deprana cultraria*, *Stauropus fagi*, *Odontosia cuculla*, *Drymonia trepida*, and *Grambus chrysonuchellus*. Near Tring are the large reservoirs belonging to the Grand Junction Canal Company, and on their banks are to be met with several species whose larvæ feed on willows, rushes and other plants which are of aquatic habits or flourish in the neighbourhood of water. *Cerura bifida*, *C. furcula*, *Pterostoma palpina*, *Drymonia tremula* (*dictæa*), *Notodonta dromedarius*, *N. ziczag*, *Acronycta aceris*, *A. ligustri*, *Leucania straminea*, *L. obsoleta*, *Caradrina fulva*, *C.*

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lutosa, and *C. arcuosa* are among the species which have been obtained at Wilstone reservoir. It is to be regretted that the Micro-Lepidoptera of the Tring district have not received more attention; they would doubtless well repay investigation.

From south-east Herts Mr. W. C. Boyd, F.E.S., of The Grange, Waltham Cross, who has collected the Macro-Lepidoptera since 1851 and the Micros since about 1867, has been able to furnish a very valuable list of upwards of 740 species, including 107 *Tortrices* and 255 *Tineinæ*. Over seventy of the smaller insects in his list have not yet been observed in any other part of the county, and the capture by him of *Antigastra catalaunalis* on September 18th, 1867, was the first British record of the occurrence of the species and the only one to this day. Short lists of east Herts insects have also been sent from Bishop's Stortford by Messrs. W. E. Taylor and W. T. Mellows. Mr. Matthews of Stevenage is able to report the capture of *Thecla betulæ* which has been taken sparingly in Norton Green Woods, but is not recorded from any other Hertfordshire locality.

In 1894 I was allowed to inspect two small but interesting collections made in the neighbourhood of East Barnet. One was at the Boys' Farm Home, and this contained specimens of *Utetheisa pulchella*, *Setina irrorella*, *Ocnieria monacha*, and *Sphinx convolvuli*. The other was in the possession of Colonel Gillum of Church Hill House, whose insects I catalogued, and their names appear in the subjoined list. Among them may be mentioned *Glisiocampa castrensis*, *Pygæra pigra*, *Metrocampa pro-sapiaria*, and *Eucestia spartiata*.

LIST OF LEPIDOPTERA OBSERVED IN HERTFORDSHIRE

CARADRININA

ARCTIADÆ

- Lithosia complana, L. *Haileybury* (Bowyer)
- lurideola, Zk. (complanula, B.). *St. Albans*, *Wheathampstead*, *Redbourn* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Bricket Wood* (Cottam); *Hemel Hempstead* (B. Piffard); *Berkhamsted* (Goodson); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)
- griseola, Hb. (stramineola, Dbld.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Heath,' School List; *Hertford* (Stephens); *Watford* (Wigg); *Wilstone reservoir* (Elliman); *Tring* (Goodson); *Cheshunt* (Boyd)

Mr. Elliman writes with reference to *L. griseola*: 'I have found it

ARCTIADÆ (continued)

- sparingly at *Wilstone reservoir*; one specimen I took was settled in the flowers of hemp agrimony (*Eupatorium cannabinum*) in the day-time.' Mr. Boyd describes the species as being common in the *Cheshunt* district. He took one specimen of var. *stramineola* at *Cheshunt Street*, circa 1857
- sororcula, Hufn. (aureola, Hb.). *Bricket Wood* (Spencer, A. E. G.); *Haileybury* (Bowyer), 'St. Margarets,' School List
- Cybosia mesomella*, L. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Knebworth* (Durrant); *Haileybury* (Bowyer), 'Heath,' School List; *Hertford* (Stephens)
- Setina irrorella*, L. *East Barnet* (Bowden)
- Miltochrista miniata*, Forst. *Knebworth* (Brown, Durrant); *Haileybury* (Bowyer), 'Roman road, Heath,' School List; *Hertford* (Stephens); *East*

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ARCTIADÆ (continued)

Barnet (Gillum); *Bricket Wood* (Cottam); *Cheshunt* (Boyd)

Mr. Arthur Cottam has taken this pretty insect rather plentifully at 'sugar' at *Bricket Wood*, and Mr. Stockley says that it comes rather freely to 'light' at *Haileybury*. At *Cheshunt* it is scarce

Miltochrista senex, Hb. *Sandridge* (Griffith); *Haileybury* (Bowyer), 'once,' School List

Nudaria mundana, L. *Sandridge* (Griffith); *Hertford* (Stephens); *Duckmore Lane*, *Tring* (Le Quesne, Elliman); *Cheshunt* (Boyd)

'An immense swarm' was reported to the Hertfordshire Natural History Society (*Transactions* I. xvii.) as having occurred at 'light' at *Harpenden* on December 13th, 1879, but this was an obvious error, one of the winter moths being of course referred to. Mr. Elliman reports that a few specimens were taken in *Duckmore Lane*, *Tring*, by Mr. Le Quesne and himself, and he remarks that when beaten out of a hedge this species frequently feigns death. Mr. Boyd finds this to be a local insect

Nola cucullatella, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Watford* (Spencer); *Hemel Hempstead* (B. Piffard); *Haileybury* (School List); *Tring* (Elliman); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

This insect is taken occasionally at 'light,' though Mr. Elliman reports it to be 'more common in the larval than imago stage'

Sarrophthrips undulana, Hb. (revayana, Tr.). *Bushey Heath* (Barraud); *Bricket Wood* (Cottam); *Feldon*, near *Boxmoor* (A. Piffard)

Mr. Cottam captured this insect at *Bricket Wood* in 1899; Mr. Barraud took one specimen at 'light' on November 1st, 1900; and Mr. Albert Piffard secured another in the same year. It is probably overlooked by collectors, who mistake it for a Tortrix

Earius chlorana, L. *Cheshunt* (Boyd)

Hylophila bicolorana, Fuesl. (quercana, Schiff.). *Bricket Wood* (Stoyel, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Tring* (Goodson); *Cheshunt* (Boyd)

Halias prasinana, L. *Bricket Wood* (Cot-

ARCTIADÆ (continued)

tam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Tring*, larvæ (Hon. L. Walter Rothschild); *Stevenage* (Matthews); *Cheshunt* (Boyd)

This and the two preceding species are not often met with

Tyria jacobææ, L. *St. Albans* (A. Lewis, A. E. G.); *Watford* (Cutts, Spencer, A. E. G.); *Welwyn* (G. Buller, A. E. G.); *Hemel Hempstead* (B. Piffard); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Tring* (Elliman, Le Quesne); *Stevenage* (Matthews); *Bishop Stortford* (Taylor); *Broxbourne* (Boyd); *Railway bank*, *Oxhey*, and *Oxhey Wood* (H. Rowland-Brown)

This species appears to be generally distributed throughout the county, although in some localities it is much more abundant than in others. I have found the larvæ in very great numbers feeding upon ragwort in the *Tunnel Woods* at *Watford*. Mr. Matthews on the other hand reports that it is not at all common at *Stevenage*, and that he has only seen two or three specimens. Several observers have taken it principally in the imago stage at 'light.' Writing from *Haileybury*, Mr. G. C. H. Stockley says it is 'becoming scarcer, but the increased growth of its food plant (ragwort) will no doubt bring up its numbers again'

Utetheisa pulchella, L. *East Barnet* (Rühl)

In 1892 Mr. Rühl, the schoolmaster at the Boys' Farm Home, *East Barnet*, captured a specimen of this moth on the embankment of the Great Northern Railway near *Oakleigh Park* Station, just within the county boundary. The insect is now in my possession

Phragmatobia fuliginosa, L. *Bricket Wood* (A. E. G.); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer); *Tring* (Goodson); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

Mr. Matthews reports this insect as being fairly common in his district, but with Mr. Boyd it is scarce, he having seen only one or two specimens at *Cheshunt*. In the *Haileybury* School List one bred specimen is reported

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ARCTIADÆ (continued)

Diacrisia mendica, Cl. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Oxhey Wood* (Cutts); *East Barnet* (Gillum); *Watford* (Spencer); *Stubblings Wood*, *Tring* (Le Quesne); *Cheshunt* (Boyd)

This is not an abundant insect in Hertfordshire

— *urticæ*, Esp. (papyratia, Marsh). *Haileybury* (Bowyer); *East Barnet* (Gillum); *Cheshunt* (Boyd)

— *menthastri*, Esp. Very common throughout the county

— *lubricipeda*, L. Almost as abundant as the preceding species

Arctia villica, L. *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Railway bank*, *Oxhey* (H. Rowland-Brown)

According to the Haileybury School List this insect is only occasionally observed. Both Mr. Matthews and Mr. Boyd report it to be scarce. I have not seen it in the *St. Albans* district

— *caja*, L. The larvæ of this abundant species are locally called 'woolly bears.' The perfect insects occasionally come to 'light'

Callimorpha dominula, L. *Hitchin* (Durrant)

CARADRINIDÆ

Cucullia chamomillæ, Schiff. *St. Albans* (A. E. G.); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Nascot Wood* (Cutts); *Watford* (Cottam)

Occasionally found at rest on palings, etc.

— *umbratica*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Colney Heath* (Pilbrow); *Watford* (Spencer, Cottam); *Tring* (Le Quesne); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

This species was taken rather plentifully flying round the flowers of the jasmine by Mr. Mellows. It is occasionally taken at 'light' and at rest

— *scrophulariæ*, Cap. *Ickleford* (Latchmore)

The late Mr. Frank Latchmore of Hitchin used to find the larvæ of this species abundant on the water betony at *Ickleford* and other places in the north of the county

CARADRINIDÆ (continued)

Cucullia verbasci, L. *St. Albans* (A. E. G.); *Welwyn* (G. Buller); *Hitchin* (Durrant, Latchmore, Gatward); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Bushey Heath* (Barraud); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Mr. E. G. Elliman reports that at *Tring* the larvæ of this species are scarce some years, plentiful others. They were specially abundant in 1900 at *St. Albans* and neighbourhood

Polia exoleta, L. *St. Albans* (Griffith); *Haileybury* (Bowyer); *Oxhey Wood* (Cutts); *Hitchin* (Gatward); *Hadley Woods* (Bowden); *Bricket Wood* (Cottam); *Tring*, at ivy (Le Quesne), and at willows (Elliman); *Stevenage* (Matthews); *Cheshunt Marsh* (Boyd)

— *vetusta*, Hb. *Berkhamsted* (Griffith); *Nascot Wood* (Cutts); *Bricket Wood* (Cottam); *Stevenage* (Matthews)

— *ornithopus*, Rott. (rhizolita, F.). *Haileybury* (Bowyer), 'at "light,"' School List; *Hertford* (Stephens); *Tring* (Elliman)

— *areola*, Esp. (lithorhiza, Bkh.). *St. Albans* (A. E. G.); *Bricket Wood* (A. Lewis, A. E. G.); *Hemel Hempstead* (B. Piffard); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *East Barnet* (Gillum); *Tring* (Elliman); *Eastbury* (H. Rowland - Brown); *Cheshunt* (Boyd)

This moth is generally distributed throughout the county, occurring at 'light,' at willows and on palings in March and April

— *viminalis*, F. *Bricket Wood* and *Bamville Wood Farm*, *Harpden Common*, larvæ (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Wigg); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Bishop Stortford* (Mellows); *Cheshunt Marsh* (Boyd)

— *protea*, Bkh. *Bricket Wood* and *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Terrace field,' School List; *Hertford* (Stephens); *Oxhey Wood* (Cutts); *East Barnet* (Gillum); *Watford* (Heaton, Wigg); *Bushey Heath* (Barraud); *Waltham Cross*, sometimes common (Boyd)

INSECTS

CARADRINIDÆ (continued)

Polia aprilina, L. *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Heath,' School List; *Hertford* (Stephens); *Bushey* and *Oxhey Wood* (Cutts); *Tring* (Le Quesne, Elliman); *Cheshunt* (Boyd)

This moth often comes freely to 'sugar' at *Bricket Wood* in the autumn. The larvæ may be found in the spring and early summer by searching the trunks of oak trees at night, when they are ascending to feed. They also hide in the crevices of the bark, their colour and markings assimilating very closely to a lichen-covered tree trunk and thus affording protection. Mr. Boyd describes this species as scarce in the *Cheshunt district*

— *flavicincta*, F. *St. Albans* (A. Lewis, A. E. G.); *Bricket Wood* (A. E. G.); *Hitchin* (Durrant); *Hertford* (Stephens); *Bushey* (Cutts); *Bushey Heath* (Barraud); *East Barnet* (Gillum); *Watford* (Spencer, Wigg, Cottam); *Tring* (Le Quesne); *Bishop Stortford* (Taylor); *Cheshunt Street* (Boyd)

This species seems to be more abundant in some parts of the county than at others. At *Haileybury* it has only been taken once; at *Cheshunt* it is scarce; whilst at *St. Albans*, *Watford* and *Tring* it is rather common, both at 'light' and on palings. I have taken the larvæ on artichokes in my garden, and Mr. Lewis captured them on ivy at *Sparrowswick, St. Albans*

Miselia oxyacanthæ, L. *Bricket Wood* (A. Lewis, Cutts, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'at "light,"' School List; *Oxhey Wood* and *Bushey* (Cutts); *Watford* (Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson); *Cheshunt* (Boyd)

var. *capucina*, Mill. *Bricket Wood* (A. E. G.); *Bushey Heath* (Barraud)

Diloba cœruleocephala, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *East Barnet* (Gillum); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Tay-

CARADRINIDÆ (continued)

lor, Mellows); *Oxhey* (H. Rowland-Brown); *Cheshunt* and *Bayford* (Boyd)

This moth is abundant at 'light,' and its conspicuously-coloured larvæ are often to be met with on hawthorn hedges

Asteroscopus sphinx, Hufn. (cassinea, Hb.). *Bricket Wood*, larvæ (Lewis); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'at "light,"' at rest,' School List; *Hertford* (Stephens); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Aldenham Wood*, one specimen (Spencer); *Watford* (Wigg); *East Barnet* (Gillum)

Aporophyla lunosa, Hw. *St. Albans, Bricket Wood* and *Harpندن* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *East Barnet* (Gillum); *Tring* (Elliman); *Cheshunt* (Boyd)

When the *Haileybury School List* was published this insect was described as not common, but Mr. Stockley states it is now fairly abundant. It is reported by most observers to occur rather freely

Orthosia xerampelina, Hb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Watford* (Spencer, Cottam); *Haileybury* (School List); *Tring* (Le Quesne, Elliman); *Cheshunt* (Boyd); *Colney Heath* (Pilbrow)

A scarce species

— *croceago*, F. *Hertford* (Stephens)
— *citrago*, L. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Gorhambury*, larvæ (A. E. G.); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

— *aurago*, F. *Bricket Wood*, one specimen (A. E. G.); *Watford* (Spencer)

— *flavago*, F. (silago, Hb.). *Bricket Wood* (A. E. G., Lewis, Cottam); *Harpندن* (A. E. G.); *Sandridge* and *Knebworth* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Watford* (Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

A fairly common insect in most of the districts, coming rather freely

A HISTORY OF HERTFORDSHIRE

CARADRINIDÆ (continued)

to 'sugar.' Mr. Boyd however finds it scarce round *Cheshunt*

Orthosia fulvago, L.(cerago, F.). *Bricket Wood* (Cottam, Lewis, A. E. G.); *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Common at 'sugar' and 'light'

— *gilvago*, Esp. *St. Albans*, *Bricket Wood*, *Wheatthampstead* (A. E. G.); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* and *Nascot Wood* (Cutts); *Watford* (Spencer, Cottam); *Bushey Heath* (Barraud); *Waltham Cross* (Boyd)

— *circellaris*, Hufn. (ferruginea, Esp.). *St. Albans*, *Wheatthampstead* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)

— *litura*, L. *St. Albans* (larvæ), and *Wheatthampstead* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Bushey* and *Hare Spring Wood*, *Aldenham* (Cutts); *Watford* (Spencer, Wiggs); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd); *East Barnet* (Dymond)

Common at 'sugar,' ivy and 'light'

— *helvola*, L. (*rufina*, L.). *Bricket Wood* (A. Lewis, Cottam, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Tring* (Elliman); *East Barnet* (Gillum)

— *pistacina*, F. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Bricket Wood* (Cottam); *East Barnet*

CARADRINIDÆ (continued)

(Gillum); *Tring* (Elliman); *Cheshunt* (Boyd)

An abundant and variable species

Orthosia macilenta, Hb. *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Hertford* (Stephens); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg)

— *lota*, Cl. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

— *ypsilon*, Bkh. *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

Although Mr. Boyd finds *O. ypsilon* to be common round *Cheshunt*, it is far from abundant in other parts of the county, only having been recorded from four stations

— *suspecta*, Hb. *Bushey Heath* (Barraud)

Mr. Barraud has taken three specimens of this local moth at indoor 'light,' two being captured in 1899 and one in 1900

— *satellitica*, L. *Bricket Wood* (A. Lewis, Cutts, A. E. G.); *Sandridge* (Griffith); *Knebworth* (Durrant); *Haileybury* (Bowyer); *Nascot Wood*, *Oxhey Wood* and *Bushey* (Cutts); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Tring* (Le Quesne, Elliman); *East Barnet* (Gillum)

Both the yellow and the white spotted varieties are common at 'sugar' at *Bricket Wood*. The larvæ are very abundant

Conistra erythrocephala, F. *St. Albans* (Knaggs, *Entomologists' Annual*, 1866, p. 139)

— *ligula*, Esp. (*spadicea*, Hw.). *Sandridge* (Griffith); *Haileybury* (Bowyer); *Nascot Wood*, *Oxhey Wood*, and *Bushey* (Cutts); *Bricket Wood* (Cottam); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Tring* (Elliman); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

— *vaccinii*, L. *St. Albans* (A. E. G.); *Bricket Wood* (A. Lewis, Cottam, A. E. G.); *Hemel Hempstead* (B. Piffard); *Haileybury* (Bowyer); *Hertford* (Stephens); *Nascot Wood*, *Oxhey*

INSECTS

CARADRINIDÆ (continued)

- Wood and Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Tring* (Elliman); *East Barnet* (Gillum); *Cheshunt* (Boyd)
- Leucania turca*, L. *Bricket Wood* and *Hedges Farm, St. Albans* (A. E. G.); *Knebworth* (Durrant)
- *lithargyrea*, Esp. *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Tring* (Elliman); *Oxhey* (H. Rowland-Brown); *Cheshunt* (Boyd)
- *conigera*, F. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Bushey* (Cutts); *Watford* (Spencer, Wigg, Cottam); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *East Barnet* (Gillum); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)
- At *Haileybury* this species is found to be abundant at 'light' and 'sugar'; at *Cheshunt* it is common, and at *Bricket Wood* fairly so. On the other hand Mr. Barraud did not take it at *Bushey Heath* until the summer of 1900, when several came to 'light,' and Mr. Elliman describes it as 'not common' at *Tring*
- *comma*, L. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Spencer, Wigg, Cottam); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *East Barnet* (Gillum); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)
- *obsoleta*, Hb. *Wilstone reservoir* (Elliman)
- Mr. Elliman says that the larvæ are very common in September
- *straminea*, Tr. *Haileybury* (School List); *Wilstone reservoir* and *Tring* (Elliman)
- This species was taken once at 'light' at *Haileybury*
- *impura*, Hb. *Bricket Wood, Wheathampstead* and *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Wilstone reservoir*

CARADRINIDÆ (continued)

- (Elliman); *East Barnet* (Gillum); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)
- Abundant everywhere
- Leucania pallens*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)
- A common species
- Monima incerta*, Hufn. (*instabilis*, Esp.). *St. Albans, Wheathampstead* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* and *Oxhey Wood* (Cutts); *Oxhey railway bank* (H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *East Barnet* (Gillum); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)
- *gracilis*, F. *St. Albans* (A. E. G.); *Bricket Wood* (A. Lewis, Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey* (Cutts); *Oxhey Wood* (Cutts, H. Rowland-Brown); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *Haileybury* (Stockley); *Cheshunt* (Boyd)
- *stabilis*, View. *St. Albans, Park Street, Wheathampstead* and *Harpenden* (A. E. G.); *Bricket Wood* (A. Lewis, Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* and *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey railway bank* (H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)
- *populeti*, Tr. *Bricket Wood* (A. Lewis, A. E. G.); *St. Albans* (A. Lewis); *Oxhey Wood* (Cutts); *Watford* (Spencer); *Bushey Heath* (Barraud); *East Barnet* (Gillum); *Cheshunt Marsh* (Boyd)
- This species occurs sparingly at *sallows*. Mr. Boyd and Mr. Barraud each record the capture of one specimen at their stations. In 1895 Mr. Lewis and I took eight specimens at *Bricket Wood*

A HISTORY OF HERTFORDSHIRE

CARADRINIDÆ (continued)

Monima miniosa, F. *Bricket Wood* (A. Lewis, Cutts, Cottam, A. E. G.); *Watford* (Spencer); *Sandridge* (Griffith)

Bricket Wood appears to be the headquarters for this insect. Although it cannot be said to be abundant, it is to be taken at tallows nearly every spring, and in some years much more plentifully than others

- *pulverulentula*, Esp. (*cruda*, Tr.). *St. Albans*, *Park Street*, *Wheatthampstead* and *Hawthwick* (A. E. G.); *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* and *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

This is the smallest and at the same time the commonest of the Hertfordshire *Monimæ*, often occurring at tallows in great profusion. The only observer who reports it as being 'not very common' is Mr. Barraud. Next to this the most abundant species are *stabilis*, *gothica* and *incerta*

- *munda*, Esp. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Oxhey Wood* and *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer)

M. munda and *miniosa* do not appear to have been noticed in the northern and eastern parts of the county, while Mr. Boyd is the only observer who has taken *M. populeti* in either of those districts

- *gothica*, L. *St. Albans*, *Park Street* and *Wheatthampstead* (A. E. G.); *Bricket Wood* (A. Lewis, Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Oxhey Wood*, *Bushey* and *Nascot Wood* (Cutts); *Bushey Heath* (Barraud); *Oxhey railway bank* (H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

M. opima is the only species belonging to this genus which has not been recorded as occurring in the county

CARADRINIDÆ (continued)

Charæas graminis, L. *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Boxmoor* (A. Piffard); *Aldbury* (Elliman, Cottam)

A local insect, *Aldbury Owers* being the station at which it is most abundant

Neuronia popularis, F. *St. Albans*, *Harpden* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Royston* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg); *Tring* (Le Quesne); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Panolis piniperda, Panz. *Hertford* (Stephens); *Watford* (Wigg)

Mr. Stephens captured the first British specimen of this moth at *Hertford* in April, 1810 (*Illustrations of British Entomology*, iii. 20)

Harmodia nana, Rott. (*conspersa*, Esp.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'once on *Ball's Park* palings,' School List

- *carpophaga*, Bkh. *Haileybury* (Bowyer); *St. Albans* (Griffith); *East Barnet* (Gillum); *Watford* (Spencer, Cottam); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); '*Herts*' (Rev. H. Harpur Crewe)

This is rather a scarce moth, several of the recorders having taken but one specimen each. The Rev. H. Harpur Crewe (*Zoologist*, xi. 4,037) records having bred this insect from larvæ found on seeds of *Selene inflata* in July and August in Herts, Bucks and Derbyshire. The larvæ lie coiled up between the calyx and the seed vessel of the plant (*ibid.* xii. 4,192). Mr. Elliman reports that the larvæ are very plentiful at *Tring*

- *capsincola*, Hb. *Sandridge* (Griffith); *Haileybury* (Bowyer); *Watford* (Wigg); *Tring* (Foulkes); *Cheshunt* (Boyd)

- *cucubali*, Fuesl. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Bushey* (Cutts); *Watford* (Wigg); *Hemel Hempstead* (B. Piffard, Rev. H. Harpur Crewe); *Carpender's Park* (H. Rowland-Brown); *Cheshunt* (Boyd)

The Rev. H. Harpur Crewe (*Zoologist*, xi. 4,037) records the capture of larvæ on *Selene inflata* in July and

INSECTS

CARADRINIDÆ (continued)

August in Herts and Bucks. It is not a common species

Melanchra cæspitis, F. *Nascot Wood* (Cutts); *Watford* (Spencer); *Aldbury Owers* (Elliman); *Cheshunt* (Boyd)

A rare and very local species

— *reticulata*, Vill. (*saponariæ*, Bkh.). *Sandridge* (Griffith); *Haileybury* (Bowyer); *Nascot Wood* and *Bushey* (Cutts); *Watford* (Cottam); *Tring* (Le Quesne, Elliman)

— *serena*, F. *Wheathampstead* (A. E. G.); *Sandridge* (Griffith, A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* and *Nascot Wood* (Cutts); *Watford* (Spencer, Wigg); *Bricket Wood* (Cottam); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

This moth may in some years be found in considerable numbers in the daytime at rest in the crevices of bark of oak, elm and other trees. It also occurs on fences. On the whole it cannot be described as a common insect

— *chrysozona*, Bkh. (*dysodea*, Hb.). *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Hitchin station* (Durrant); *Stortford* (Mellows); *Cheshunt Street* (Boyd)

Mr. Mellows has taken this moth in his study, where it has been attracted by the light. At *Haileybury* it has been found twice on palings.

Mr. Boyd describes it as scarce

— *trifolii*, Rott. (*chenopodii*, F.). *St. Albans* (A. Lewis); *Sandridge* (Griffith); *Haileybury* (School List); *Bushey Heath* (Barraud); *Waltham Cross* (Boyd)

— *dentata*, Esp. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

Fairly common at 'light,' 'sugar' and fences in most of the districts, but scarce round *Cheshunt*

— *genistæ*, Bkh. *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Cottam); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

A scarce species

CARADRINIDÆ (continued)

Melanchra thalassina, Rott. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Watford* (Cutts, Wigg, Cottam); *Bushey Heath* (Cottam); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Elliman)

— *dissimilis*, Kn. (*suasa*, Bkh.). *Watford* (Spencer); *Haileybury* (School List)

— *oleracea*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bricket Wood* (Cottam); *Bushey Heath* (Barraud); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

A very common insect

— *pisi*, L. *St. Albans* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cottam, Spencer); *Wigginton Common*, larvæ (Elliman)

— *advena*, F. *St. Albans*, *Harpenden* (A. E. G.); *Haileybury* (Bowyer); *Nascot Wood* (Cutts); *Tring* and *Wilstone* (Elliman); *Waltham Cross* (Boyd)

Occasionally taken at flowers, 'sugar' and 'light'

— *nebulosa*, Hufn. *Bricket Wood* (Cottam, A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts, H. Rowland-Brown); *Watford* (Heaton, Wigg); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman)

Common

— *brassicæ*, L. A garden pest and too abundant everywhere

— *persicariæ*, L. Almost as common as the preceding species

Agrotis corticea, Hb. *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey Heath* (Barraud)

— *segetum*, Schiff. Very common and destructive

— *ypsilon*, Rott. (*suffusa*, Hb.). *St. Albans* and *Wheathampstead* (A. E. G.); *Bricket Wood* (A. E. G., Cottam); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* and *Nascot Wood* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Tring* (Le Quesne, Foulkes); *Cheshunt* (Boyd)

Fairly common in mid-Herts, but scarce at *Cheshunt*

— *exclamationis*, L. A common and variable species

A HISTORY OF HERTFORDSHIRE

CARADRINIDÆ (continued)

Agrotis nigricans, L. *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer); *Cheshunt* (Boyd)

Occasionally taken at 'light' and flowers

— *saucia*, Hb. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Nascot Wood* (Cutts); *Watford* (Wigg); *Bricket Wood* (Cottam); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

Occasionally taken at 'sugar'

— *cinerea*, Hb. *Feldon*, *Boxmoor* (A. Piffard)

Mr. A. Cottam, in a paper presented to the Hertfordshire Natural History Society (*Transactions*, x. 188), records the capture of three males at *Feldon*, *Boxmoor*, at 'light' by Mr. Albert Piffard in 1897. This is the only county record, and the insects are in Mr. Cottam's collection

— *puta*, Hb. *St. Albans* (A. Lewis, A. E. G.); *Watford* (Spencer); *Bricket Wood* (Cottam); *Haileybury* (School List); *Bushey Heath* (Barraud); *Tring* (Elliman); *Waltham Cross* (Boyd)

A. puta comes sparingly to 'sugar' and 'light.' It cannot be called a common species in Hertfordshire

— *pecta*, L. *Bricket Wood* and *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* and *Knebworth* (Durrant); *East Barnet* (Gillum); *Nascot Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Common and generally distributed

— *strigula*, Thnb. (*porphyrea*, Hb.). *Sandridge* (Griffith); *Haileybury* (Bowyer), '*Heath*,' School List; *Watford* (Cottam); *Tring* (Elliman)

— *tritici*, L. *Hitchin* (Durrant); *East Barnet* (Gillum); *Watford*, one specimen at 'light' (Cottam)

— *augur*, F. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Nascot Wood* and *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H.

CARADRINIDÆ (continued)

Rowland-Brown; *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt Street* (Boyd)

Generally abundant at 'light' and 'sugar.' Mr. Boyd reports that it used to be common at *Cheshunt Street*

Agrotis obscura, Brh. (*ravida*, Hb.). *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Cheshunt* (Boyd)

A scarce species; taken twice at 'light' at *Haileybury*

— *putris*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Wigg); *Tring* (Elliman)

A. putris is occasionally taken, chiefly at 'light.' Mr. Elliman finds the pupæ in the *Tring* district at the foot of elm trees

— *c-nigrum*, L. *St. Albans*, *Wheatthampstead* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Nascot Wood* and *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Tring* (Elliman); *Stortford* (Taylor); *Cheshunt* (Boyd)

Abundant in most of the districts, and especially common in mid-Herts in 1900. Mr. Barraud has only taken a few specimens at *Bushey Heath*

— *triangulum*, Hufn. *Harpenden* (A.E.G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Tring* (Elliman); *Cheshunt* (Boyd)

Described as 'common at "light"' in the *Haileybury* School List, but scarce in other districts

— *pronuba*, L. A plentiful species, occurring in all the districts

— *comes*, Hb. (*orbona*, F.). Another abundant species, almost as common as the preceding

— *brunnea*, F. *St. Albans* (A. E. G.); *Bricket Wood* (A. Lewis, Cottam, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman)

INSECTS

CARADRINIDÆ (continued)

Fairly common; Mr. Barraud has not seen it for some years

Agrotis xanthographa, F. Very common in all the districts. A nuisance at 'sugar'

— *umbrosa*, Hb. *Sandridge* (Griffith); *East Barnet* (Gillum); used to occur at *Cheshunt Street* (Boyd)

— *rubi*, View. (bella, Bkh.). *St. Albans* and *Symonds Hyde* (A. E. G.); *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Rather common at 'light' and 'sugar'

— *dahlia*, Hb. *Haileybury* (Stockley)

— *festiva*, Hb. (conflua, Tr.). *St. Albans* and *Radlett* (A. E. G.); *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman)

Moderately common

— *stigmatica*, Hb. (rhomboidea, Tr.). *St. Albans* (A. Lewis); *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Bricket Wood* (Cottam); *Duckmore Lane*, *Tring* (Elliman); *Waltham Cross* (Boyd)

Uncommon. Several observers have only captured this species once. Mr. Stockley writing from *Haileybury* says 'rhomboidea and *dahlia* have both been taken several times at "sugar"'

— *typica*, L. *St. Albans*, *Shenley* (pupa) and *Bricket Wood* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg, Heaton); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

A rather common species

Triphæna fimbria, L. *Bricket Wood* (Cottam, Cutts, A. E. G.); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Tring* (Hon. C. Walter Rothschild, Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

CARADRINIDÆ (continued)

This species is occasionally taken both at 'sugar' and 'light.' It is scarce in some of the districts. At *Bricket Wood* the larvæ may be beaten from fallows in the spring

Triphæna ianthina, Esp. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Heaton, Cottam); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

In some districts this species comes plentifully to 'light.' Mr. Boyd finds it to be scarce round *Cheshunt*

— *interjecta*, Hb. *Sparrowswick*, *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Duckmore Lane*, *Tring* (Elliman); *Cheshunt* (Boyd)

Although common round *Cheshunt* this species is scarce in most of the districts

— *baja*, F. *Bricket Wood* (Cottam, A. E. G.); *Symonds Hyde* (A. E. G.); *Haileybury* (Bowyer); *Oxhey Wood* (Cutts); *Bushey Heath* (Barraud); *Tring* (Elliman)

Not a generally common insect, though occasionally, as at *Symonds Hyde* in August, 1893, it comes to 'sugar' in large numbers

— *rubricosa*, F. *St. Albans* (A. E. G.); *Bricket Wood* (A. Lewis, Cutts, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* and *Bushey* (Cutts); *Oxhey railway bank* (H. Rowland-Brown); *Watford* (Wigg, Spencer); *Stubbings Wood* (Elliman); *Tring* (A. T. Goodson); *Cheshunt Marsh* (Boyd)

Occasionally taken at fallows

— *prasina*, F. (herbida, Hb.). *Bricket Wood* (A. E. G.); *Haileybury* (Bowyer); *Roundhill Wood*, *Tring* (Elliman)

A few specimens of this moth have been taken at 'sugar'; it is not a common insect

Heliothis armigera, Hb. *Sandridge* (Griffith)

— *peltigera*, Schiff. *Hitchin*, one specimen in 1884 (Durrant)

— *ochracea*, Hb. (flavago, Esp.). *St. Albans*, *Radlett* and *Harpenden*, in

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CARADRINIDÆ (continued)

train from *Luton* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Cutts, Wigg); *Wigginton Heath* (Foulkes); *Cheshunt* (Boyd)

A scarce species, coming occasionally to 'light'

Nonagria arundinis, F. (typhæ, Esp.). *Sparrowswick*, *St. Albans* (Lewis); *Sandridge* (Griffith); *Haileybury* (School List); *Watford* (Spencer); *Tring* and *Wilstone reservoir* (Elliman); *Cheshunt* (Boyd)

This species is marked 'doubtful' in the *Haileybury* List. At *Cheshunt* it is common; at *Tring* it comes to 'light'

Cœnobia rufa, Hw. (despecta, Tr.). *Cheshunt Marsh* (Boyd)

Luperina testacea, Hb. *St. Albans*, *Hawkswick* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Tring* (Elliman); *Cheshunt* (Boyd)

A very common moth at 'light'

Rusina tenebrosa, Hb. *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Knebworth* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Cheshunt* (Boyd)

Fairly common at 'sugar' and 'light' except in the *Cheshunt* district

Amphipyra pyramidea, L. *Bricket Wood*, *Symonds Hyde* and *Wbeathampstead* (A. E. G.); *Sandridge* (Griffith); *Knebworth* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* and *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Le Quesne); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Common throughout the county

— *tragopogonis*, L. Common everywhere, coming in abundance to 'sugar'

Caradrina pyralina, View. *Bushey* (Cutts); *Watford* (Cottam); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown)

A rare species which seems to be confined to the south-west of the county

CARADRINIDÆ (continued)

Caradrina diffinis, L. *Bricket Wood* (A. E. G.); *St. Albans* (A. Lewis); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* and *Aldenham* (Cutts); *Watford* (Spencer); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Le Quesne); *Cheshunt* (Boyd)

Not a common moth, but occasionally taken at 'light' and at rest

— *affinis*, L. *Harpenden* and *Symonds Hyde* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (South); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Tring* (Le Quesne, Elliman); *Cheshunt* (Boyd)

A rather scarce species

— *trapezina*, L. *St. Albans* and *Symonds Hyde* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* and *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Cheshunt* (Boyd)

Common and variable

— *subtusa*, F. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cottam); *Tring* (Elliman); *Waltham Cross* (Boyd)

Not common

— *retusa*, L. *Sandridge* (Griffith); *Hertford* (Stephens); *Cheshunt Marsh* (Boyd)

A scarce insect

— *umbra*, Hufn. (*marginata*, F.). *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum)

— *micacea*, Esp. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Wigg); *Bushey* (Cutts); *Cheshunt* (Boyd)

A fairly common species

— *lutosa*, Hb. (*crassicornis*, Hw.). *Hitchin* (Durrant); *Watford* (Spencer); *Wilstone reservoir* (Foulkes, Elliman)

One specimen only was taken at *Watford* by Mr. Spencer at 'light' in 1892

— *fulva*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); 'Heath, Skipper fields,' School List;

INSECTS

CARADRINIDÆ (continued)

Hertford (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Wilstone reservoir* (Elliman); *Cheshunt Marsh* (Boyd)

A scarce species

Caradrina arcuosa, Hw. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Oxhey Lane* (H. Rowland-Brown); *Wilstone reservoir* and *Tring* (Elliman); *Cheshunt* (Boyd)

— *quadripunctata*, F. (*cubicularis*, Bkh.). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer); *Bushey Heath* (Barraud); *Tring* (Elliman); *Haileybury* (School List); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Common at *St. Albans*, *Haileybury*, *Bricket Wood* and *Cheshunt*; not common at *Bushey Heath*

— *morpheus*, Hufn. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Tring* (Elliman); *Cheshunt* (Boyd)

A common species

— *alsines*, Brh. *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Heaton); *Tring* (Elliman); *Cheshunt* (Boyd)

Mr. Barraud finds this species to be common. At *Haileybury* it is abundant at 'light,' at *Tring* rather common and at *Cheshunt* scarce

— *taraxaci*, Hb. (*blanda*, Tr.). *Harpenden* (A. E. G.); *Sandridge* (Griffith); *East Barnet* (Gillum); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

Not very abundant. Described as rather common at *Tring* and common round *Cheshunt*

— *trigrammica*, Hufn. (*trilinea*, Bkh.). *St. Albans*, *Bricket Wood* and *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Watford* (Spencer, Wigg); *Hemel Hempstead* (B.

CARADRINIDÆ (continued)

Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

var. *bilinea*. *Radlett* (A. E. G.); *Cheshunt* (Boyd)

This species is common throughout Hertfordshire, but var. *bilinea* is seldom met with

Caradrina matura, Hufn. (*cytherea*, F.). *St. Albans* (A. Lewis); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bricket Wood* (Spencer, Cottam); *Watford* (Cottam); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Not generally common, but sometimes taken at 'sugar' and 'light'

Hadena meticolosa, L. Common in all the districts

— *lucipara*, L. *St. Albans* (A. E. G.); *Bricket Wood* (Cottam, A. Lewis, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* and *Wilstone reservoir* (Elliman); *Cheshunt* (Boyd)

Common at 'light,' dusk and 'sugar'

— *atriplicis*, L. *Haileybury* (Bowyer), 'once,' School List; 'again noted in 1899' (Stockley)

— *maura*, L. *Brooklands Farm*, *Elstree* (A. E. G.); *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Rye House* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Le Quesne); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Apparently more abundant in the eastern part of the county than in mid and west Herts

— *scabriuscula*, L. (*pinastri*, L.). *St. Albans* (A. Lewis); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Bricket Wood* (Cottam); *Bushey Heath* (Barraud); *Rickmansworth* (A. Sainsbury Verey); *Waltham Cross* (Boyd)

Mr. Boyd and Mr. Barraud both describe this species as 'sometimes common'

— *adusta*, Esp. *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Tring* (Elliman)

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CARADRINIDÆ (continued)

Mr. Elliman finds *H. adusta* rather scarce at 'light,' and Mr. Barraud took two at 'sugar' in 1897

Hadena gemina, Hb. *St. Albans*, *Bricket Wood* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Tring* (Elliman); *Cheshunt Marsh* (Boyd)

A fairly common species, but scarce at *Cheshunt Marsh*

— *polyodon*, L. (monoglypha, Hufn.).

A very common and widely distributed insect

— *lithoxylea*, F. Abundant at all the stations, though Mr. Barraud does not take it so commonly as formerly

— *sublustris*, Esp. *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey* and *Watford* (Cutts); *Tring* (Le Quesne)
Scarce at 'sugar'

— *rurea*, F. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg, Heaton); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

var. *combusta*. *Bricket Wood* (A. E. G.); *Bushey Heath* (Barraud)

A common species in some of the districts, but scarce at *Cheshunt*. Mr. Barraud has taken a few specimens including var. *combusta*, and at *Haileybury* it occurs occasionally

— *hepatica*, Hb. *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Abundant in some districts, but not common at *Tring*

— *sordida*, Bkh. (anceps, Hb.). *Bricket Wood* and *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Nascot Wood* (Cutts); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

— *basilinea*, F. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith);

CARADRINIDÆ (continuea)

Haileybury (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman)

Hadena ophiogramma, Esp. *St. Albans* (A. Lewis); *Sandridge* (Griffith); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg, Cottam)

Rare and seldom taken

— *leucostigma*, Hb. (fibrosa, Hb.). *Haileybury* (Bowyer), 'once at "light,"' School List

— *unanimis*, Tr. *Haileybury* (Bowyer); *East Barnet* (Gillum); *Cheshunt Marsh* (Boyd)

— *didyma*, Esp. (oculea, Gn.). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Very abundant at 'sugar' and 'light'; a variable species

— *nictitans*, Bkh. *St. Albans* and *Welwyn* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bricket Wood* (Cottam); *Bushey Heath* (Barraud); *Carpenders* (H. Rowland-Brown); *Wilstone reservoir* (Elliman); *Waltham Cross* (Boyd)

A common species, the forms with white and orange reniform spots being equally abundant

— *literosa*, Hw. *Sandridge* (Griffith); *Haileybury* (Stockley)

Mr. Stockley says that this species, like *H. fasciuncula*, is becoming commoner at *Haileybury* every year

— *bicoloria*, Vill. (furuncula, Hb.). *St. Albans*, *Bricket Wood* and *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Hemel Hempstead* (B. Piffard); *Cheshunt* (Boyd)

Generally common, but only taken occasionally at 'light' at *Haileybury*

— *strigilis*, Cl. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bow-

INSECTS

CARADRINIDÆ (continued)

yer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Cheshunt* (Boyd)

A very abundant and variable species

Hadena fasciuncula, Hw. *Bricket Wood* and *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Wigg); *Oxhey Lane* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt Marsh* (Boyd)

Common; see note to *H. literosa*

Metachrostis perla, F. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Common at 'light' and rest

Acronycta leporina, L. *Sandridge* (Griffith); *Haileybury* (School List); *Watford* (Cutts, Spencer); *Tring* (Hon. L. Walter Rothschild)

Mr. Spencer has taken a number of larvæ of this moth on birch at *Watford*. At *Haileybury* it was captured once on the heath and in 1877 the Hon. L. Walter Rothschild caught it at *Tring*

— *alni*, L. *Hoddesdon* (F. M. Campbell); *Haileybury* (Bowyer); *Oaklands*, *St. Albans* (Pilbrow); *Nascot Wood* (Cutts); *Tring* (A. T. Goodson); *Tring Park* (Hon. L. Walter Rothschild); *Churchgate*, *Cheshunt* (Boyd)

This interesting and uncommon species is more often taken in the larval form than as a perfect insect

The first published records of the occurrence of this species in Hertfordshire are, it is believed, those of its capture in a fence in *Nascot Wood Road*, *Watford*, by Mr. J. E. K. Cutts in 1891 and the discovery of a mature larva by Mr. F. M. Campbell, F.L.S., on some fresh-turned mould under a lime tree in his garden at *Rose Hill*, *Hoddesdon*, on August 21st in that year (*Transactions of the Hertfordshire Natural*

CARADRINIDÆ (continued)

History Society, vii. 195). The records by Mr. Pilbrow of *Colney Heath* and Mr. Bowyer of *Haileybury* are of larvæ captured in 1893

Acronycta tridens, Schiff. *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Tring* and *Wilstone* (Elliman); *Cheshunt Street* (Boyd)

A local species; the larvæ are fairly common at *Haileybury*

— *psi*, L. Common throughout the county

— *megacephala*, F. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Tring* (Foulkes); *Wilstone* (Elliman); *Cheshunt* (Boyd)

Generally distributed but not abundant. Taken at 'sugar,' 'light' and at rest

— *aceris*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Heaton); *Hemel Hempstead* (B. Piffard); *Wilstone reservoir* (Elliman); *Cheshunt* (Boyd)

A scarce insect

— *ligustri*, F. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Watford* (Spencer); *Wilstone reservoir* (Elliman); 'Herts' (Rev. H. Harpur Crewe)

The records generally are of the capture of isolated specimens or of its occurrence in small numbers. The Rev. H. Harpur Crewe (*Zoologist*, xi. 4,037) reared one specimen from a larva taken on ash in July in Herts

— *rumicis*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Watford* (Spencer); *Cheshunt* (Boyd)

A scarce Hertfordshire species

PLUSIADÆ (Hypenides)

Æthia tarsipennalis, Tr. *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

Occasionally at 'light,' common round *Cheshunt*

— *nemoralis*, F. (*grisealis*, Hb.). *St. Albans*, *Bricket Wood* and *Wheatbampstead* (A. E. G.); *Sandridge* (Griffith); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

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PLUSIADÆ (Hypenides) (continued)

At 'light'; common round *Cheshunt*

Herminia barbalis, Cl. *Hertford* (Stephens); *Hitchin* (Durrant)

Hypena rostralis, L. *Bricket Wood* and *St. Albans* (A. E. G.); *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Watford* (Cottam); *Cheshunt* (Boyd)

— *proboscidalis*, L. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Cottam); *Oxhey Wood* (H. Rowland-Brown); *Stortford* (Taylor); *Cheshunt* (Boyd)

Aventia flexula, Schiff. *Sandridge* (Griffith); *Bricket Wood* (Cutts, Cottam); *Bushey Heath* (Barraud); has occurred at *Bayford* and *Cheshunt* (Boyd)

PLUSIADÆ (Plusiades)

Ophiusa pastinum, Tr. Caught at *Knebworth* by Mr. Benjamin Brown, formerly of Deard's End Farm (Griffith, *Transactions of the Hertfordshire Natural History Society*, iii. 266)

Scoliopteryx libatrix, L. *St. Albans*, *Bricket Wood* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant, F. Latchmore); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* and *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Stortford* (Taylor); *Cheshunt* (Boyd)

Generally abundant, but Mr. Barraud does not find this species to be very common at *Bushey Heath*

Plusia moneta, F. *Watford* (Cottam); *Bushey Heath* (Barraud); *Tring* (Skipp); *Waltham Cross* (Boyd)

This insect, which was first taken in Great Britain at Dover as recently as 1890, appears to be establishing itself in Hertfordshire. The first specimen captured in the county was caught by Mr. Arthur Cottam in *Watford* on June 19th, 1896. The capture is recorded in the *Transactions of the Hertfordshire Natural History Society*, ix. 236. Mr. Cottam was catching the moths that came to a large clump of honeysuckle then in full flower in the garden of *Elmcote* with the late Mr.

PLUSIADÆ (Plusiades) (continued)

Clarence E. Fry, who then resided there. In the same year it was taken at *Hastoe* near *Tring* by John Skipp, then setter and assistant at the Hon. L. Walter Rothschild's museum, eight specimens being secured in the last week of June and first week of July. On July 18th, 1899, Mr. Barraud took a splendid specimen of *P. moneta* in his light trap at *Bushey Heath*. The most recent records are by Mr. W. C. Boyd, who took two specimens at *Waltham Cross* in 1900

Plusia chrysitis, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Welwyn* (G. Buller); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

Common in many localities

— *festucae*, L. *Watford* (Cottam)

— *iota*, L. *St. Albans* and *Hatfield* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Cottam, Spencer); *Bushey Heath* (Barraud); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Rather common at 'light' and flowers

— *pulchrina*, Hw. (v-aureum, Gn.). *Harpenden* (A. E. G.); *Welwyn* (Buller); *Haileybury* (Bowyer); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Watford* (Spencer); *Tring* (Le Quesne, Elliman); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)

Rather local; fairly abundant in some localities, but only occasionally met with in others

— *gamma*, L. An abundant and widely distributed species, but variable in numbers in different seasons. Thus in 1892 it is noted by Mr. Spencer as being very abundant at *Watford*, but in the following year it was seldom met with. Mr. H. Rowland-Brown of Harrow Weald observed that it was again scarce on the Middlesex border in 1881

— *interrogationis*, L. Once at *Cheshunt Street* (Boyd)

INSECTS

PLUSIADÆ (Plusiades) (continued)

Plusia tripartita, Hufn. (urticæ, Hb.). *St. Albans*, *Harpندن*, *Bricket Wood* and *Rickmansworth* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Common at flowers and 'light'

— *triplesia*, L. *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Cottam, Spencer); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

This moth is described by the last-named observer as common round *Cheshunt*, but in other parts of the county it is only occasionally met with, chiefly at flowers at dusk. Mr. Elliman speaks of it as very scarce at honeysuckle, and Mr. Barraud has taken several specimens

Catocala fraxini, L. *Haileybury* (Bowyer); *Waltham Cross* (Boyd)

Mr. Boyd says that this insect has been seen at *Waltham Cross*, but the only record of its actual capture in Hertfordshire is that at *Haileybury*. Mr. Bowyer thus describes the event in a paper read before the members of the Hertfordshire Natural History Society at Hertford on February 28th, 1888 (*Transactions*, v. 29). He says: 'Last autumn our porter brought to me a large moth which he had picked up in the quadrangle. I thought at first it was the common "red underwing," but it gave a flap of its wings and I saw violet instead of red, and I knew that I had a great prize—*Catocala fraxini*'

— *nupta*, L. *St. Albans* (A. Lewis, A. E. G.); *Hawkswick*, *Bamville Wood Farm*, *Harpندن Common*, and *Cross Farm*, *Wheatbampstead* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Grove Mill* (F. Latchmore); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Nascot Wood*, *Bushey* and *Oxhey Wood* (Cutts); *Watford* (Cottam, Spencer); *Bushey Heath* (Barraud); *Carpenders Park* (H. Rowland-Brown); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

Commoner in some years than others; in 1900 especially abundant.

PLUSIADÆ (Plusiades) (continued)

The late Mr. Frank Latchmore of *Hitchin* reported in 1894 that this insect was quite common by the water side in that neighbourhood. It is a hardy species and is often to be taken in October even on cold nights with a strong wind blowing. At 'light,' 'sugar' and on palings

Euclidia mi, Cl. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey railway bank* (H. Rowland-Brown); *Oxhey Wood* (Cutts); *Tring* (Cottam); *Dancer's End* and *Aldbury Owers* (Le Quesne, Elliman); *Long Meadow*, *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)

Generally abundant where it occurs. Scarce round *Cheshunt*

— *glyphica*, L. *Hatfield Woodside* (A. E. G.); *Hitchin* and *Knebworth* (Durrant); *Haileybury* (Bowyer), 'Skipper fields,' School List; *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Oxhey railway bank* (H. Rowland-Brown); *Stortford* (Mellows)

Mr. Elliman finds this insect very common in the *Tring* district, but usually on the chalk downs. At *Bishop Stortford* it is plentiful in *Long Meadow*. In mid-Herts it is occasionally met with in some abundance in clover fields, the food plants of the larvæ being various species of trifolium and other leguminous plants

Erastria fasciana, L. (*fuscata*, Bkh.). *Bricket Wood* (A. E. G.); *Knebworth* (Durrant); *Haileybury* (Bowyer), 'Roman road, once,' School List

Rare

— *luctuosa*, Esp. *Hertford* (Stephens, *Illustrations of British Entomology*, iii. 113)

— *viridaria*, Cl. (*ænea*, Hb.). *Berkhamsted* (A. Piffard, *Entomologist* for 1889, p. 77); *Hertford* (Stephens); *Tring* (Elliman); *Broxbourne Wood* (Boyd)

Mr. Elliman finds this moth on nearly all the chalk downs in the neighbourhood of *Tring*. It appears to be a local species

Panemeria tenebrata, Sc. (*arbuti*, F.). *Bricket Wood* (Spencer, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Orchis field,' School List; *Hertford* (Stephens);

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PLUSIADÆ (Plusiades) (continued)

East Barnet (Gillum); *Nascot Wood* (Cutts); *Oxbey* (H. Rowland-Brown); *Tring* (Goodson); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Said to be very common at *Stevenage* among long grass, flying in the sunshine; also common at *Cheshunt*; not generally abundant

Rivula sericealis, Sc. *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Tring* (A. T. Goodson)

ÆNERIADÆ

Orgyia gonostigma, F. *Bricket Wood* (Griffith); *Haileybury* (Bowyer)

Mr. Griffith found a larva of *O. gonostigma* on oak at *Bricket Wood* in 1884. Mr. Bowyer records the capture of this moth once at *Haileybury*. In the School List it is said to have occurred 'formerly on *Heath*,' and Mr. Stockley writes with regard to it: 'Apparently no longer taken, as I have not heard of any but a solitary specimen in 1897 for six years'

— *antiqua*, L. *St. Albans* and *Welwyn* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Oxbey* (H. Rowland-Brown); *Tring* and *Wilstone* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd)

This is one of the species which are commonest in those parts of the county which approach suburban London. It is generally distributed, but in those parts of Hertfordshire which are most remote from the metropolitan district it is met with less frequently. Mr. Boyd describes it as common, Mr. Matthews as fairly common, a remark which would also apply to *St. Albans*. Mr. Elliman speaks of it as not very common but general—the larvæ may be obtained pretty freely about *Wilstone* and *Drayton Beauchamp*—and says the apterous female may be most easily obtained by rearing

Dasychira pudibunda, L. *St. Albans* (larvæ) and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Nascot Wood* (Cutts); *Watford* (Spencer, Wigg, Cottam); *Tring* (Elliman); *Stevenage* (Matthews)

This is occasionally met with. Mr. Elliman finds the larvæ on beech

ÆNERIADÆ (continued)

Colocasia coryli, L. *Watford* (Wigg); *Tring* (Elliman); *Theobald's Grove station*, one (Boyd)

The Rev. H. Harpur Crewe says: 'The larvæ of *Orgyia coryli* are by no means uncommon in Hertfordshire on beech' (*Zoologist*, x. 3,625). Mr. Elliman writes with regard to this species: 'Common, more especially in the larval state. The pupæ may be found under moss on beech trees and the perfect insect sits on the same tree at the end of April and in May. The larvæ are very variable in colour, most of them being some shade of red, yellow and brown, but almost black specimens may be found. I have beaten it from beech, hazel, oak and sawall'

Porthesia similis, Fuesl. (*auriflua*, F.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Common. Mr. Elliman finds it most abundant in the low-lying portions of the district. It is well known that the hairs from the dorsal tufts of the larvæ have an irritating effect upon the human skin. One of the observers named above was so badly affected by them that the doctor pronounced him to be suffering from an attack of measles

Euproctis chrysorrhœa, L. *East Barnet* (Gillum); *Haileybury* (School List); *Stevenage* (Matthews); *Watford* (Heaton); *Tring* (Hon. L. Walter Rothschild); *Bishop Stortford* (Mellows)

A rare species. The Hon. L. Walter Rothschild took one specimen in 1897. Mr. Matthews is the only observer who speaks of it as 'fairly common.' Mr. Mellows has found the larvæ, but says they are very scarce

Stilpnotia salicis, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Startups End* and *Wilstone reservoirs* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

This is a very local insect. Mr. Spencer has bred it from larvæ found

INSECTS

CENERIADÆ (continued)

on poplars. Mr. Elliman knows of only one spot where the moth occurs in any abundance and that is *Start-ups End reservoir*, where a row of willows may be seen stripped every year by the larvæ. Single specimens have occurred now and then at *Wilstone reservoir*. This observer is of opinion that the sluggish habits of the perfect insect account for its being so restricted in its distribution. In the Haileybury School List the larvæ are said to be common and Mr. Matthews finds them to be fairly so at *Stevenage*. At *Cheshunt* this is a scarce species

Ocneria monacha, L. *Sandridge* (Griffith); *Hitchin* and *Knebworth* (Durrant); *Haileybury*, two at 'light' (School List); *Watford* (Wigg)

NOTODONTINA

HYDRIOMENIDÆ

Trichopteryx viretata, Hb. *Haileybury* (Bowyer), 'palings,' School List

Mysticoptera sexalisata, Hb. *Sandridge* (Griffith); *Tring* (Elliman)

Lobophora halterata, Hufn. (hexapterata, Schiff.). *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Roman road,' School List

Chloroclystis coronata, Hb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Hemel Hempstead* (B. Piffard); *Waltham Cross* (Boyd)

— *rectangulata*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cutts, Cottam); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Common at 'light' and on palings. Mr. Barraud has taken one dark variety

Gymnoscelis pumilata, Hb. *Bushey Heath* (Barraud)

Mr. Barraud reports that in his locality this insect appears every year

Tephroclystis venosata, F. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Nascot Wood* (Cutts); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd)

It is stated in the Haileybury School List that this insect has been

HYDRIOMENIDÆ (continued)

taken 'once at "light,"' but Mr. Stockley reports that it is now much commoner, several being caught annually. It is scarce round *Cheshunt*, not very common at *Tring*, and has been seen a few times on the railway embankment at *Stevenage*

Tephroclystis campanulata, H.-S. Wood near *Tring* Rev. H. Harpur Crewe (*Entomologists' Annual*, 1866, p. 157)

— *minutata*, Gn. *Watford* (Spencer)

— *absintheata*, Cl. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Cheshunt* (Boyd)

At *Haileybury* the larvæ are abundant on ragwort. This species is common round *Cheshunt*

— *assimilata*, Gn. *Sandridge* (Griffith); *Hitchin* (Durrant); *Cheshunt* (Boyd) Common round *Cheshunt*

— *albipunctata*, Hw. *Hitchin* (Durrant); *Brocket Hall*, larvæ (Griffith); *Cheshunt Marsh*, 'sometimes common' (Boyd)

— *valerianata*, Hb. *Tring* (Goodson)

— *vulgata*, Hw. *St. Albans*, *Bricket Wood*, *Ashridge* and *Aldenham* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Oxhey* (H. Rowland-Brown); *Cheshunt* (Boyd)

A common species, the most abundant of the genus

— *oblongata*, Thnb. (*centaureata*, F.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Common at 'light' and on palings

— *subfulvata*, Hw. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer); *Bushey Heath* (Barraud); *Tring* (Goodson); *Cheshunt* (Boyd)

Common at 'light' and on palings

— *satyrata*, Hb. *Watford* (Wigg); near *Drayton*, ? Herts (Rev. H. Harpur Crewe); *Cheshunt* (Boyd)

A scarce species

— *pulchellata*, Stph. *Tring Park* (Elliman); *Bushey Heath* (Barraud)

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HYDRIOMENIDÆ (continued)

Mr. Barraud took one specimen at 'light' in July, 1900

Tephroclystis linariata, F. Sandridge (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); has occurred in *Broxbourne Woods* (Boyd)

— *succenturiata*, L. Sandridge (Griffith); *Hitchin* (Durrant); *Watford* (Wigg); *Cheshunt* (Boyd)

A scarce species

— *castigata*, Hb. *St. Albans* and *Bricket Wood* (A. E. G.); Sandridge (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Mississippi fields,' School List; *Tring* (Elliman); *Cheshunt* (Boyd)

Generally common

— *lariciata*, Frr. Sandridge (Griffith); *East Barnet* (Gillum); *Watford* (Cutts); *Aldbury Owers* (Elliman)

— *virgaureata*, Dbld. (*pimpinellata*, Gn. non Hb.). Sandridge (Griffith)

I take this to be the insect which appears in Mr. Griffith's Sandridge list as *Eupithecia pimpinellata*

— *plumbeolata*, Hw. Sandridge (Griffith)

— *isogrammaria*, H.-S. (*haworthiata*, Stt.). Sandridge (Griffith); *Tring* (Elliman)

— *tenuiata*, Hb. *Haileybury* (Bowyer); *Cheshunt* (Boyd)

According to the School List this species is occasionally taken at *Haileybury*; round *Cheshunt* it is common

— *trisignaria*, H.-S. *Brocket Hall*, larvæ (Griffith)

— *subciliata*, Gn. *Tring* (Elliman)

— *pusillata*, F. *Watford* (Spencer)

Mr. Spencer took one specimen of this very local insect in *Rowse Barn Lane, Watford*, in May, 1894

— *abbreviata*, Stph. Sandridge (Griffith); *Cheshunt*, scarce (Boyd)

— *exiguata*, Hb. Sandridge (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Tring* (Elliman); *Cheshunt* (Boyd)

Rather common

— *fraxinata*, Crewe. Sandridge (Griffith); *Cheshunt* (Boyd)

This insect has occurred twice at *Cheshunt*

— *sobrinata*, Hb. Sandridge (Griffith); *Hitchin* (Durrant); *Tring* (Elliman); *Cheshunt* (Boyd)

Described by Mr. Boyd as common round *Cheshunt*

— *nanata*, Hb. Sandridge (Griffith); *Hertford* (Stephens)

HYDRIOMENIDÆ (continued)

Eucymatoge subnotata, Hb. *St. Albans* (A. E. G.); *Bushey Heath* (Barraud); *Waltham Cross* (Boyd)

Common at *Waltham Cross*; occasionally taken at 'light' at the other two stations

— *scabiosata*, Bkh. (*subumbrata*, Gn.). *Tring* (Elliman)

— *vitalbata*, Hb. Sandridge (Griffith); *Haileybury* (Bowyer), 'Heath,' School List; *East Barnet* (Gillum); *Watford* (Spencer); *Tring* (Elliman, Le Quesne); *Cheshunt Street* (Boyd)

Mr. Spencer has taken this insect at fences and 'light.' It has only occurred once at *Cheshunt Street*

— *tersata*, Hb. Sandridge (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'at "light," Hailey Lane,' School List; *Hertford* (Stephens); *Watford* (Spencer, Wigg); *Tring* (Elliman, Le Quesne)

Eucestia spartiata, Fuesl. *Haileybury* (Bowyer), 'Heath,' School List; *Symonds Hyde*, larvæ (Griffith); *East Barnet* (Gillum); *Carnell's Green, Broxbourne* (Boyd)

— *plagiata*, L. *St. Albans, Park Street, Hawkswick* and *Harpenden* (A. E. G.); Sandridge (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cutts, Spencer); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Common in most of the districts; occasionally taken at 'light'

Calocalpe certata, Hb. *St. Albans* (A. E. G.); Sandridge (Griffith); *Haileybury* (Stockley); *Watford* (Spencer, Wigg); *Hemel Hempstead* (B. Piffard); *Kilsmore Lane, Cheshunt* (Boyd)

Mr. Stockley caught the only specimen of *C. certata* recorded for *Haileybury* in 1899. Mr. Boyd records a single capture at *Cheshunt*. A few years ago this insect was abundant in some bushes of *Berberis vulgaris* in the field behind *St. Michael's Church, St. Albans*

— *undulata*, L. Sandridge (Griffith)

Philereme vetulata, Schiff. Sandridge (Griffith); *Hitchin* (Durrant); *Hemel Hempstead* (B. Piffard); *Duckmore Lane, Tring* (Elliman, Goodson)

INSECTS

HYDRIOMENIDÆ (continued)

Mr. Bernard Piffard thus records the capture of the *Hemel Hempstead* specimen: 'A single male specimen of this local insect has been taken here early in July. It was beaten from a very thick hedge under the shelter of a high bank. The hedge runs between the cemetery and Anchor Lane' (*Entomologist*, xxxiii. 249)

Philereme rhamnata, Schiff. *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *Watford* (Spencer); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson)

Eustroma prunata, L. (*ribesaria*, B.). *St. Albans* (A. E. G.); *Haileybury* (Bowyer), 'Goose Green,' School List; *Hertford* (Stephens); *East Barnet* (Gillum); *Tring* (Elliman)

— *associata*, Bkh. (*dotata*, Gn. non L.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Spencer); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

A rather common insect

— *testata*, L. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Wilstone reservoir* (Elliman); *Cheshunt* (Boyd)

Fairly common

Plemyria bicolorata, Hufn. (*rubiginata*, F.). *Brooklands Farm, Elstree* (A. E. G.); *Haileybury* (Bowyer), 'Heath,' School List; *East Barnet* (Gillum); *Watford* (Spencer); *Tring* (Elliman)

— *rivata* (Hb.). *Bricket Wood* and *Asbridge* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Cheshunt Marsh* (Boyd)

Occasionally taken; scarce at *Cheshunt Marsh*

— *sociata*, Bkh. (*subtristata*, Hw.; *birivata*, Stt.). *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cutts, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

A common species

HYDRIOMENIDÆ (continued)

Cataclysmes virgata, Rott. (*lineolata*, Hb.). *Sandridge* (Griffith)

Hydriomena ocellata, L. *Bricket Wood* and *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Cheshunt* (Boyd)

Generally common at 'light' and on palings

— *simulata*, Hb. (*coniferata*, Stt.). *Haileybury* (School List); *Cheshunt* (Boyd)

Common round *Cheshunt*, but rare at *Haileybury*

— *variata*, Schiff. (*obeliscata*, Hb.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer); *Bushey Heath* (Barraud)

Occasionally taken at 'sugar' and 'light'

— *juniperata*, L. *Tring* (Elliman)

— *fulvata*, Forst. *St. Albans* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

A common species at 'light' and dusk, and may often be beaten from hedges

— *dotata*, L. (*pyraliata*, F.). *St. Albans* and *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Common in most of the districts

— *picata*, Hb. *St. Albans*, *Bricket Wood* and *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Heath,' School List; *Watford* (Cutts, Spencer, Wigg); *Churchgate, Cheshunt* (Boyd)

Occasionally taken. Mr. Boyd has only captured one specimen round *Cheshunt*

A HISTORY OF HERTFORDSHIRE

HYDRIOMENIDÆ (continued)

Hydriomena miata, L. *St. Albans* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bricket Wood* (Cutts); *Watford* (Heaton, Wigg); *Wilstone* (Elliman); *Tring* (Goodson); *Cheshunt* (Boyd)

In most of the districts this insect is fairly common at 'light,' but Mr. Boyd has only taken one specimen in his locality

- *sordidata*, F. (*elutata*, Hb.). *St. Albans* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* and *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

A fairly common and very variable species

- *trifasciata*, Bkh. (*impluviata*, Hb.; *literata*, Don.; *ruberata*, Frr.). *Haileybury* (Bowyer); *Watford* (Heaton)

A rare species. The Haileybury School List records the capture of one specimen of *trifasciata* and one of *ruberata*

- *truncata*, Hufn. (*russata*, Bkh.; *immanata*, Hw.). *St. Albans*, *Hedges Farm*, *Bricket Wood*, *Welwyn* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

The two forms *russata* and *immanata* are regarded by many entomologists as distinct species, and most of the Hertfordshire observers have treated them as such. In this list no attempt has been made to discriminate between them. Both forms appear to be fairly well distributed through the county and both are common

- *silacea*, Hb. *Sandridge* (Griffith); *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg)

Not common

- *corylata*, Thnb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Watford* (Spencer, Wigg);

HYDRIOMENIDÆ (continued)

Bricket Wood (Cottam); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman)

- Hydriomena suffumata*, Hb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

Local and not very abundant; comes to 'light'

- *dubitata*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Tring* (Elliman); *Cheshunt Street* (Boyd)

Common in the *Tring* district, but apparently not very often met with round *Watford*. In *Cheshunt Street* it is scarce

- *badiata*, Hb. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Cutts, Spencer); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Common at 'light,' shallows and on palings

- *nigrofasciaria*, Gz. (*derivata*, Bkh.). *St. Albans* and *Bamville Wood*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Cutts, Heaton); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Burton Grange* (Boyd)

Common at 'light' and on palings

- *rubidata*, F. *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Roman road,' School List; *East Barnet* (Gillum); *Bushey* (Cutts); *Hemel Hempstead* (B. Piffard)

- *albicillata*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *East Barnet* (Gillum); *Watford* (Spencer, Wigg); *Hemel Hempstead* (B. Piffard); *Waltham Cross* (Boyd)

Not frequent. Only met with once at *Waltham Cross*

- *unangulata*, Hw. *St. Albans* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Watford* (Wigg); *Berkhamsted* (Goodson); *Cheshunt Marsh* (Boyd)

Scarce

INSECTS

HYDRIOMENIDÆ (continued)

Hydriomena alchemillata, L. *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Heaton)
Scarce at 'light'

— *affinitata*, Stph. *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Spencer, Heaton, Wigg)
Scarce and local

— *decolorata*, Hb. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'woods beyond *Pavilion field*,' School List; *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Wigg); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Goodson); *Halfhide Lane, Cheshunt Marsh* (Boyd)

— *albulata*, Schiff. *Symonds Hyde* (A.E.G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Mississippi fields,' School List; *Oxhey Wood* (H. Rowland-Brown); *Wigginton Common* (Foulkes); *Cheshunt* (Boyd)

Locally common

— *procellata*, F. *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Wigg)

Not common; larvæ taken on clematis

— *bilineata*, L. A very common species; abundant in all the districts

Pelurga comitata, L. *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Wigg); *Bushey Heath* (Barraud); *Stortford* (Taylor)

Although only recorded in a few localities, this insect appears to be abundant where it does occur. Mr. Barraud says that it is common, and in 1900 especially so at 'light.' He notes that it varies a good deal in colour of markings

Operophtera brumata, L. Very common everywhere

— *boreata*, Hb. *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud)
Scarce and local

Euchœca luteata, Schiff. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Cutts, Spencer); *Tring* (Elliman); *Hammond Street, Cheshunt* (Boyd)

Mr. Elliman remarks that this insect is local, but common where it occurs. Mr. Boyd finds it scarce

— *obliterata*, Hufn. (*heparata*, Hw.). *Sandridge* (Griffith)

HYDRIOMENIDÆ (continued)

Asthena candidata, Schiff. *St. Albans, Harpenden, Bricket Wood and Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Cutts, Spencer); *Tring* (Elliman); *Broxbourne Woods* (Boyd)

A common species

— *murinata*, Sc. (*euphorbiata*, F.). *Tring* (Foulkes)

— *dilatata*, Bkh. *St. Albans, Radlett and Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Very common on fences at 'light,' etc.

Xanthorhoe vittata, Bkh. (*lignata*, Hb.). *Hitchin* (Durrant); *Haileybury* (School List); has occurred at *Cheshunt Marsh* (Boyd)

— *cervinata*, Schiff. *St. Albans* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer); *Tring* (Le Quesne); *Cheshunt* (Boyd)

This species is local, but common where it occurs. I have taken the larvæ in considerable numbers on hollyhocks at *Avenue House, St. Albans*

— *limitata*, Sc. (*mensuraria*, Schiff.). *Brooklands Farm, Elstree, and Bamsville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Watford* (Heaton, Wigg); *Tring* (Elliman); *Cheshunt Marsh* (Boyd)

Common

— *plumbaria*, F. (*palumbaria*, Bkh.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Bushey* (Cutts); *Watford* (Heaton); *Oxhey* (H. Rowland-Brown)

— *bipunctaria*, Schiff. *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *Gallows Hill, Haileybury* (School List); *Tring* (Elliman)

Mr. Elliman reports that this species is very common on the chalk

— *multistrigaria*, Hw. *St. Albans* (A. E. G.); *Hitchin* (Durrant); *Watford* (Spencer); *Canal bank, Tring* (Goodson)

A HISTORY OF HERTFORDSHIRE

HYDRIOMENIDÆ (continued)

Xanthorhoe didymata, L. *St. Albans*, *Bricket Wood* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Generally common

— *spadicearia*, Bkh. (*ferrugaria*, Hw.; *ferrugata*, Clerck). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cutts, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

A common species

— *ferrugata*, L. (*unidentaria*, Hw.). *Bricket Wood* and *Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Common

— *designata*, Rott. (*propugnata*, F.). *Radlett*, *Bricket Wood*, *Symonds Hyde* and *Knebworth* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Cutts, Spencer, Wigg); *Bushey Heath* (Barraud); *Theobalds* (Boyd)

This species is often to be commonly met with. Mr. Barraud notes that the first brood is less abundant than the second, and he finds specimens of the later brood to be smaller and not so well marked

— *quadrifasciaria*, Cl. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Wigg); *Hastoe Lane*, *Tring*, on a fence (Elliman)

— *firmata*, Hb. *Brocket Hall* (Griffith); scarce round *Cheshunt* (Boyd)

— *montanata*, Bkh. Abundant everywhere

— *fluctuata*, L. *St. Albans* and *Asbridge* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Cutts, Spencer); *Bushey Heath* (Barraud);

HYDRIOMENIDÆ (continued)

Oxhey (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

A common species. A variety of smaller size has occurred at *Asbridge*

Xanthorhoe olivata, Bkh. Tolerably common at *Tring* (Elliman)

— *viridaria*, F. (*pectinataria*, Km.; *miaria*, Bkh.). *St. Albans* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Roman road, Heath,' School List; *Watford* (Spencer, Heaton, Wigg); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Elliman); *Broxbourne Woods* (Boyd)

STERRHIDÆ

Eois muricata, Hufn. (*auroraria*, Bkh.). *Bishop Stortford* (Mellows)

Mr. Mellows states that he caught a number of these little insects flying round a haystack in *Bishop Stortford* in 1898, but has seen none since that date

— *virgularia*, Hb. (*incanaria*, Hb.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Common at *Cheshunt*; Mr. Barraud has only taken a few

— *straminata*, Tr. *Haileybury*, not common (School List)

— *dilutaria*, Hb. (*interjectaria*, B.; *osseata*, Stt.). *St. Albans* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Watford* (Heaton); *Berkhamsted* (A. T. Goodson); *Tring* (Elliman); *Cheshunt* (Boyd)

Generally common. 'Osseata not common; interjectaria at "light"' (*Haileybury School List*)

— *subsericeata*, Hw. *Haileybury* (Bowyer); *East Barnet* (Gillum)

Rare

— *inornata*, Hw. *Langley Wood* (Griffith)

— *aversata*, L. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

A common and variable species

— *emarginata*, L. *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Roman road,' School List; *Tring* (Elliman); *Flamstead End* (Boyd)

INSECTS

STERRHIDÆ (continued)

A local species; often common where it occurs

Eois dimidiata, Hufn. (scutulata, Bkh.). *St. Albans* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Generally described as common.

Mr. Elliman finds it to be common some years; at *Haileybury* it is not common

— *trigeminata*, Hw. *Haileybury* (Bowyer), 'Heath,' rare, School List; *East Barnet* (Gillum)

— *bisetata*, Hufn. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer); *Bushey Heath* (Barraud); *Cheshunt* (Boyd)

Mr. Elliman finds *E. bisetata* to be local; Mr. Barraud has only taken a few specimens; Mr. Boyd describes it as common round *Cheshunt*

Leptomeris remutaria, Hb. *St. Albans*, *Bricket Wood*, *Symonds Hyde* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Watford* (Spencer); *Tring* (Elliman); *Broxbourne Woods* (Boyd)

A common species

— *ornata*, Sc. *Canal bank*, *Tring station*, 1899 and 1900 (Goodson)

— *imitaria*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Tring* (Elliman); *Cheshunt* (Boyd)

Fairly common

— *emutaria*, Hb. *St. Albans* and *Bricket Wood* (A. E. G.)

— *rubiginata*, Hufn. (rubricata, F.). *Watford*, 1890 (Cottam)

— *orbicularia*, Hb. *Bricket Wood* (Cottam)

— *pendularia*, Cl. *Sandridge* (Griffith)

— *porata*, F. *Bricket Wood* (Spencer, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Heath,' School List

— *punctaria*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Watford* (Cutts)

— *trilinearia*, Bkh. (linearia, Hb.). *St. Albans* (A. E. G.); *East Barnet*

STERRHIDÆ (continued)

(Gillum); *Watford* (Spencer, Wigg); *Tring* (Elliman)

Mr. Elliman finds this to be very abundant in most of the beech woods in his district. It is not generally plentiful

Leptomeris annulata, Schulze (omicronaria, Hb.). *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Heath,' School List; *Tring* (Goodson)

Calothysanis amata, L. (amataria, L.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton); *Bricket Wood* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Le Quesne); *Stortford* (Taylor); *Cheshunt* (Boyd)

Common

GEOMETRIDÆ

Nemoria strigata, Müll. (thymiaria, Gn.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Foulkes, Goodson); *Cheshunt* (Boyd)

Generally common, except at *Tring*, where Mr. Elliman says that it is apparently not common, though Mr. J. L. Foulkes has taken and also bred the species

Euchloris pustulata, Hufn. (bajularia, Schiff.). *Haileybury* (Bowyer); *Watford* (Spencer); *College Road*, *Cheshunt* (Boyd)

Rare. In the *Haileybury* School List it is stated to occur on the *Heath*, but is not common. Mr. Stockley writes that it is now to be found more freely, about a score of specimens being taken in 1900. Mr. Boyd and Mr. Spencer have each taken one specimen in their localities

— *vernaria*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Roman road,' School List; *Miswell* (Elliman); *Tring* (Goodson)

Mr. Elliman says that the larvæ may be beaten from many of the old clematis hedges about *Drayton Beauchamp* and *Miswell*. It is better to take them in the spring and save the risk and trouble of keeping them through the winter

A HISTORY OF HERTFORDSHIRE

GEOMETRIDÆ (continued)

Euchloris lactearia, L. *Bricket Wood* and *Symonds Hyde* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Oxhey Wood* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Mr. Barraud finds this species to be rather scarce at *Bushey Heath*; Mr. Boyd says that it is common round *Cheshunt*; Mr. Elliman reports that in the *Tring* district it is very common in the lanes and woods

Geometra papilionaria, L. *Sandridge* (Griffith); *Haileybury* (Bowyer); *Bushey* (Cutts); *Bricket Wood* (Cottam, Cutts); *Oxhey Wood* (H. Rowland-Brown); *Grove Lodge, Tring* (Foulkes); *Berkhamsted* (Goodson); *Stortford* (Mellows); *Cheshunt Marsh* (Boyd)

Occasionally taken at 'light' and dusk

Pseudoterpna pruinata, Hufn. (cytisaria, Schiff.). *Sandridge* (Griffith); *Knebworth* (Durrant); *Haileybury* (Bowyer), 'formerly on *Heath*,' School List; *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Brown's Lane, Tring* (Goodson)

Not very abundant

MONOCTENIADÆ

Baptia atrata, L. (chærophyllata, L.). *Haileybury* (Bowyer), '*Heath*,' rare, School List; *East Barnet* (Gillum, Dymond); *Oxhey* (H. Rowland-Brown); *Colney Heath* (Pilbrow)

A local species. At *Colney Heath* it occurs only in one corner of a large field, which corner, about two acres in extent, is laid down with permanent grass

Erannis æscularia, Schiff. *St. Albans, Bricket Wood* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* and *Nascot Wood* (Cutts); *Watford* (Spencer); *Oxhey* (H. Rowland-Brown); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Common in most of the districts

Brephos parthenias, L. *Bricket Wood* (A. E. G.); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Bowden); *Bushey Heath* (Barraud); *Gryme's Dyke*, Herts side, March 31st, 1893 (H. Rowland-Brown)

MONOCTENIADÆ (continued)

Occasionally met with in March and April flying in the sunshine

SELIDOSEMIDÆ

Opisthograptis liturata, Cl. *Sandridge* (Griffith); *Haileybury* (Bowyer), 'once,' School List

— *clathrata*, L. *Aldbury, Bricket Wood* and *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); abundant on railway embankment near *Hitchin* (Matthews); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Spencer, Heaton, Wigg); *Eastbury* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman, Cottam); *Bishop Stortford* (Taylor)

— *luteolata*, L. (*cratægata*, L.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Cutts, Spencer); *Tring* (Elliman); *Hammond Street, Cheshunt* (Boyd)

Taken at 'light' at *Haileybury*; scarce at *Cheshunt*; local but common where it occurs in the *Tring* district

Diastictis wauaria, L. (*wavaria*, F.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

A fairly common species

— *roboraria*, Schiff. *Haileybury* (Bowyer), 'three at "light,"' School List

— *consortaria*, F. *Bricket Wood* (A. E. G.)
Ectropis luridata, Bkh. (*extersaria*, Hb.). *Bricket Wood* (Cottam, Spencer, A. E. G.); *Haileybury* (Bower), '*Roman-road*,' School List; *Broxbourne Woods* (Boyd)

— *biundularia* (*crepuscularia*, Hb.; *laricaria*, Dbld.). *Bricket Wood* (A. E. G.); *Bushey* (Cutts, H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Waltham Cross* (Boyd)

Mr. Elliman takes this insect in the same stations and at about the same time as *E. consonaria*; it is fairly common in the *Tring* district; elsewhere it is scarce

— *consonaria*, Hb. *Tring* (Elliman); *Broxbourne Woods* (Boyd)

Mr. Elliman says this species is evidently well distributed through the hilly woods of the district; the

INSECTS

SELIDOSEMIDÆ (continued)

end of March and April is the time to look out for it

Cleora lichenaria, Hufn. *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (H. Rowland-Brown); *Cheshunt Street* (Boyd)

Not a common species

Selidosema repandata, L. *St. Albans, Bricket Wood* and *Welwyn* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman, Goodson); *Cheshunt* (Boyd)

Generally common but scarce at *Cheshunt*

— *gemmaria*, Brh. (rhomboidaria, Hb.). *St. Albans* and *Bamville Wood, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Very common. This and the preceding species come regularly to 'light'

Bupalus piniarius, L. *Hitchin* (Durrant); *Chipperfield Common* (Spencer); *Hemel Hempstead* (B. Piffard)

Mr. Spencer saw this insect in considerable numbers on the 30th of June, 1894, flying round the tops of some Scotch firs and other conifers at *Chipperfield Common*

— *atomarius*, L. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'Heath,' School List; *Hertford* (Stephens); *Wigginton Common* (Elliman)

Synopsis abruptaria, Thnb. *St. Albans* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Although generally distributed through the county this moth is much commoner in some localities than others. It will be noticed that Mr. A. F. Griffith has not recorded it for *Sandridge*, and I do not take it very frequently at *St. Albans*; at

SELIDOSEMIDÆ (continued)

Cheshunt Mr. Boyd says it is scarce.

On the other hand at *Haileybury, Stevenage* and *Tring* it is reported to be common. Writing from the last-named place Mr. Elliman says it is common about the town; it is one of the early visitors to 'light' and may also be found on palings. At *Bushey Heath* Mr. Barraud finds it to be not so common now as formerly

Abraxas grossulariata, L. A very common and variable species

— *sylvata*, Sc. (ulmata, F.). *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Batch Wood* (A. Lewis); *Sandridge* (Griffith); *Tring Park* (Foulkes); has been taken between *Northwood* and *Rickmansworth* (H. Rowland-Brown)

Scarce, but to be taken in some abundance where it does occur, being a weak flier

— *adustata*, Schiff. *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Bricket Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson); *Turnford* and *Burton Grange* (Boyd)

Not common

— *marginata*, L. *Hedges Farm, St. Albans, Bricket Wood, Symonds Hyde* and *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bricket Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

Generally common, especially where willows grow; comes abundantly to 'light' and is very variable

Pseudopanthera punctata, F. (temerata, Hb.). *St. Albans, Ashridge, Bricket Wood* and *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Roman road, Heath,' School List; *Watford* (Spencer); *Tring* (Le Quesne, Elliman); *Bishop Stortford* (Taylor)

Not common

— *bimaculata*, F. (taminata, Hb.). *Bamville Wood Farm, Harpenden Common* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer), 'three specimens,' School List; *Watford* (Spencer, Wigg)

Scarce

A HISTORY OF HERTFORDSHIRE

SELIDOSEMIDÆ (continued)

Pseudopanthera macularia, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Roman road,' School List; *Oxhey Wood* (Cutts, H. Rowland-Brown); *Watford* (Spencer, Heaton, Wigg)

Locally abundant

— *petraria*, Hb. *Asbridge*, *Bricket Wood* and *Brocket Hall* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Durrant), 'Roman road, Heath,' School List; *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Elliman); *Broxbourne Woods* (Boyd)

Abundant amongst bracken, the food plant of the larvæ

— *lineata*, Sc. (*dealbata*, L.). *Berkhamsted* (C. H. Raynor, *Entomologist*, v. 264)

Crocota strigillaria, Hb. *Haileybury* (Bowyer), 'formerly on Heath,' School List; *Bricket Wood* (Spencer)

— *ochrearia*, Ross. *Hertford* (Stephens)
Theria rupicaprararia, Hb. Common in all the districts

Hybernia leucophæaria, Schiff. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Heath,' School List; *Bricket Wood* and *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Wormley* (Boyd)

— *marginaria*, Bkh. (*progemmaria*, Hb.). *St. Albans* and *Bamville Wood Farm*, *Harpندن Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury*, School List; *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Common. Mr. Spencer notices a great tendency to melanism in this species

— *aurantiaria*, Esp. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Nascot Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Taylor)

Fairly common

SELIDOSEMIDÆ (continued)

Hybernia defoliaria, Cl. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bricket Wood*, *Nascot Wood* and *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)

Generally common

Apocheima hispidaria, F. *Sandridge* (Griffith); *Watford* (Spencer, Heaton, Wigg); *Cheshunt station* (Boyd)

A rare species. The *Watford* observers take it at rest on the oaks in *Cassiobury Park*. Mr. Boyd has only taken one specimen at 'light'

— *pedaria*, F. (*pilosaria*, Hb.). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cutts, Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

Tolerably common at 'light' and at rest on oak trees

Biston hirtarius, Cl. *Hitchin* (Durrant); *Nascot Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Stubbings Wood*, *Tring* (Goodson); *Cheshunt* (Boyd)

Not common; several of the recorders have only captured it once

— *stratarius*, Hufn. (*prodromaria*, Schiff.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Cutts, Spencer, Wigg); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Le Quesne); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Not common, especially of late. Mr. Stockley says that at *Haileybury* it is much scarcer than formerly. He has not heard of it for four years, except for three pupæ dug by himself. At *St. Albans* it used to come to the street lamps, but it has not been taken recently. Mr. Matthews has only seen it a few times, and Mr. Boyd describes it as scarce round *Cheshunt*

— *betularius*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gil-

INSECTS

SELIDOSEMIDÆ (continued)

lum); *Nascot Wood* (Cutts); *Watford* (Heaton); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); near *Little Hadham* (Mellows); *Cheshunt* (Boyd)

Described as common in the Haileybury School List. Mr. Elliman finds it to be moderately common at *Tring*, where he has found the larvæ on spindle (*Euonymus europæus*). Mr. Barraud has taken two specimens, both of the normal type. It is scarce round *Cheshunt*

Deilinia pusaria, L. (rotundaria, Hw.). *Bricket Wood*, *St. Albans*, *Symonds Hyde* and *Bamville Wood Farm*, *Harpندن Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* and *Oxhey Wood* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Cheshunt* (Boyd)

Common. *D. rotundaria* as distinct from *pusaria* is recorded from *Sandridge* by Mr. Griffith and from *East Barnet* by Colonel Gillum

— *exanthemata*, Sc. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Cheshunt* (Boyd)

Common

Ourapteryx sambucaria, L. *St. Albans* and *Harpندن* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bricket Wood* and *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

A common species

Metrocampa prosapiaria, L. (*fasciaria*, Schiff.). *Hitchin* (Durrant); *East Barnet* (Gillum); *Waltham Cross* (Boyd)

Scarce

— *margaritaria*, L. *St. Albans* and *Zouches*, *Dunstable* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury*

SELIDOSEMIDÆ (continued)

(Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Oxhey Wood* (H. Rowland-Brown); *Tring* (Hon. L. Walter Rothschild, Elliman); *Long Meadow*, *Bishop Stortford* (Mellows); *Cheshunt* and *Waltham Cross* (Boyd)

Mr. Elliman says that this species is moderately common in the *Tring* district, chiefly in the beech woods. It well repays breeding; the larvæ may be obtained easily as soon as the beech is well out in leaf. Mr. Mellows has taken several specimens while beating the hedges in *Long Meadow*. Other recorders take it occasionally

Metrocampa pulveraria, L. *Bricket Wood* (A. E. G.); *Watford* (Spencer, Heaton, Wigg); *Haileybury* (Stockley)

A few specimens of this insect are to be taken every year at *Bricket Wood*. Mr. Stockley says it has been captured two or three times at *Haileybury*, but is scarce

— *dolabraria*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer); *Tring* (Elliman); *Wigginton* (Foulkes); *Bishop Stortford* (Mellows)

Taken occasionally at 'light' and at dusk. The Rev. H. Harpur Crewe records in *Zoologist*, xi. 4,037, rearing a specimen 'from a larva beaten off oak in July, Herts'

Euchlœna prunaria, L. *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer), 'Heath,' School List; *East Barnet* (Bowden); *Oxhey Wood* (Cutts); *Watford* (Spencer)

Not very abundant; varies a good deal

— *apiciaria*, Schiff. *Bricket Wood* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Heaton); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Le Quesne); *Wilstone reservoir* (Elliman); *Cheshunt Marsh* (Boyd)

Not generally abundant, but common at *Cheshunt Marsh*

Selenia bilunaria, Esp. (*illunaria*, Hb.). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts);

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SELIDOSEMIDÆ (continued)

Watford (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxbey* (H. Rowland-Brown); *Tring* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Several of the observers have separately recorded the occurrence of *S. juliaris*, the summer brood of this species. Both are common, the spring brood especially so

Selenia lunaria, Schiff. *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Heaton, Wigg); *Oxbey* (H. Rowland-Brown); *Tring* (Le Quesne); *Bishop Stortford* (Taylor); *Cheshunt station* (Boyd)

Rather scarce. Mr. Elliman takes it at rest at the base of larch and beech trees. It sometimes comes to 'light.' Mr. Boyd has captured it once at *Cheshunt station*

— *tetralunaria*, Hufn. (illustraria, Hb.). *East Barnet* (Gillum); *Haileybury* (School List); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Drayton Wood* (Hon. L. Walter Rothschild); *Bishop Stortford* (Mellows); *Cheshunt station* (Boyd)

The Hon. L. Walter Rothschild describes this species as very local. I have not seen it at St. Albans, but it comes to 'light' in several localities. Mr. Spencer notes that the first brood is much larger and darker than the second. Mr. Mellows has taken the larvæ on a privet bush at *Bishop Stortford*. Mr. Boyd has only taken it once

Hygrochroa syringaria, L. *St. Albans* (A. Lewis); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Bushey Heath* (Barraud); *Wilstone reservoir* (Foulkes); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

This insect sometimes comes to 'light.' Mr. Foulkes took one worn specimen at *Wilstone reservoir*; Mr. Barraud has taken a few at *Bushey Heath*; Mr. Boyd occasionally meets with it round *Cheshunt*

Cepphis advenaria, Hb. *Haileybury* (Stockley)

From the only Hertfordshire locality of this very local species Mr. Stockley writes: 'C. advenaria is now fairly common, a great number being taken this year' (1900)

SELIDOSEMIDÆ (continued)

Colotois pennaria, L. *St. Albans* and *Bricket Wood*, larvæ, and *Symonds Hyde*, larvæ (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Cottam, Spencer, Wigg); *Bushey Heath* (Barraud); *Oxbey* (H. Rowland-Brown); *Berkhamsted* (Goodson); *Tring* (Elliman); *Cheshunt* (Boyd)

Both larvæ and imago are common, the latter coming freely to 'light.' Mr. Spencer notes that the white sub-apical spot is highly developed in specimens he has bred from larvæ fed on hawthorn

Ennomos erosaria, Bkh. *Sandridge* (Griffith); *Haileybury* (School List); *Bishop Stortford* (Taylor)

Not common

— *fuscantaria*, Hw. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Bowden); *Watford* (Cottam, Spencer); *Tring* (Elliman); *Cheshunt* (Boyd)

Occasionally taken at 'light'; a scarce species

— *alniaria*, L. (*tiliaria*, Bkh.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Bricket Wood*, larvæ (A. Lewis); *Bushey* (Cutts); *Watford* (Cottam, Spencer); *Bushey Heath* (Barraud); *Wilstone reservoir* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Generally common at 'light.' Mr. Elliman says it is rather local; best bred from the larvæ, which may be obtained in some abundance off willows at *Wilstone reservoir*

— *quercinaria*, Hufn. (*angularia*, Bkh.). *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Tring* (Elliman); *Cheshunt* (Boyd)

Not very abundant; Mr. Boyd says it is scarce round *Cheshunt*; Mr. Elliman reports it common in most parts of the *Tring* district. It is not recorded for St. Albans or Watford

Gonodontis bidentata, Cl. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud);

INSECTS

SELIDOSEMIDÆ (continued)

Oxhey (H. Rowland-Brown); *Tring* (Elliman); *Burton Grange, Cheshunt* (Boyd)

Fairly common and one of the earliest arrivals at 'light.' Mr. Spencer notes slight variations as to colour

Gonodontis elinguaris, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Bishop Stortford* (Mellows, Taylor); *Cheshunt* (Boyd)

Generally common throughout the county

POLYPLOCIDÆ

Habrosyne derasa, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sparrowswick, St. Albans* (A. Lewis); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Tolerably common in some localities in certain years

Thyatira batis, L. *Bricket Wood, Radlett* and *Cassiobury Park* (A. E. G.); *Knebworth* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Oxhey Wood* (Cutts); *Watford* (Spencer, Wigg); *Bushey Heath* (Barraud); *Wilstone reservoir* (Elliman, Le Quesne); *Gryme's Ditch* (Foulkes)

Sometimes comes freely to 'sugar.' The Rev. H. Harpur Crewe reared 'two from larvæ on raspberry, July, Herts' (*Zoologist*, xi. 4, 037)

Palimpestis duplaris, L. *Bricket Wood* (Cottam, A. E. G.); *Hitchin* (Durrant); *Watford* (Cottam)

Rare

— or, *F. Bricket Wood* (Cottam, A. E. G.); *Hemel Hempstead* (A. E. G.); *Sandridge* (Griffith); *Knebworth* (Durrant); *Haileybury* (Bowyer); *Hastoe* (Elliman)

Two specimens have been taken at *Haileybury*. Rev. H. Harpur Crewe reared 'one from a larva beaten off oak in July, Herts' (*Zoologist*, xi. 4, 037)

Polyplocia diluta, F. *Bricket Wood* (Cottam, A. E. G.); *Sandridge* (Griffith); *Knebworth* (Durrant); *Hailey-*

POLYPLOCIDÆ (continued)

bury (Bowyer); *Oxhey Wood* (Cutts); *Watford* (Cottam, Spencer, Wigg)

Common at 'sugar' at *Haileybury*

Polyplocia flavicornis, L. *Bricket Wood* (Spencer)

Mr. Spencer found the larva of this moth on a young birch tree at *Bricket Wood* on May 16th, 1896, and the perfect insect emerged during the following March

— *ridens*, F. *St. Albans* (A. Lewis); *Haileybury* (Bowyer); *Theobald's and Broxbourne Woods* (Boyd)

Recorded in the *Haileybury School List* as taken at 'light,' but not common. Mr. Stockley informs me that it has not been taken lately. It is scarce in Mr. Boyd's neighbourhood. The Rev. H. Harpur Crewe reared 'one from a larva beaten off oak in July, Herts' (*Zoologist*, xi. 4, 037)

SPHINGIDÆ

Hemaris bombylifomis, Esp. *Sandridge* (Griffith)

— *fuciformis*, L. *Haileybury* (Bowyer), 'once on *Heath*,' *School List*; *Wormley* (Warner); *Broxbourne Woods* (Boyd); *Tring* (Le Quesne)

The *Tring* specimen is reported by Mr. Elliman to have been taken in the larval state on honeysuckle by Mr. Le Quesne

Macroglossa stellatarum, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Colney Heath* (Pilbrow); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Southgate* (Dymond); *East Barnet* (Gillum); *Watford* (Spencer, Heaton); *Tring* (Hon. L. Walter Rothschild, Elliman); *Bishop Stortford* (Taylor); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

This species sometimes occurs in great profusion. This was especially the case in 1893 (*vide Transactions of the Hertfordshire Natural History Society*, viii. 80). A correspondent reported that at the harvest festival at *Colney Heath Church* in that year dozens of these insects were attracted by the floral decorations, and their 'humming' was very noticeable

Deilephila porcellus, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer); *Bushey Heath* (Barraud); *Aldbury Downs* (Hon. L.

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SPHINGIDÆ (continued)

Walter Rothschild); *Bishop Stortford* (Taylor); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Though generally distributed throughout the county, this species is not by any means common. It sometimes comes to 'light.' Mr. Elliman reports that the larvæ have been taken feeding on galium by Mr. J. L. Foulkes on *Pitstone Hill*, but this is just outside the county boundary

Deilephila elpenor, L. *St. Albans*, larvæ, and *Welwyn*, larvæ (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Letchworth* (Knapp, *Entomologists' Weekly Intelligencer*, ii. 155); *Watford* (Heaton); *Bushey Heath* (Barraud); *Tring* (Le Quesne, Elliman); *Marsworth reservoir* and *Tring station* (A. T. Goodson); *Stevenage* (Matthews); *Cheshunt* (Boyd)

This species is not of rare occurrence in some localities. Mr. Boyd reports it to be common. Mr. Elliman believes that the larvæ occur every year in many of the old-established gardens in *Tring*, and Mr. Goodson has taken them at the stations indicated above. I have found them at *St. Albans* feeding on fuchsia, and at *Colney Heath* Mr. C. F. Pilbrow reports them to occur in considerable numbers feeding on water betony and other plants. At *Watford*, where *Impatiens fulva* grows on the canal bank, that plant appears to furnish their favourite food

- *nerii*, L. A specimen of this moth was taken on the 13th October, 1876, by a working man at *Hemel Hempstead*, who took it alive to Dr. Pitts of the West Herts Infirmary. That gentleman set it, and subsequently exhibited it at a conversazione at the *Watford Public Library*. It was a male, and with the exception of a bit which had been nipped out of one of its wings was in fine condition (vide *Transactions of the Watford Natural History Society*, i. 174, where a report of the occurrence is given by the late Mr. Clarence E. Fry). Mr. B. Piffard of *Hemel Hempstead*, recording the capture in the *Entomologists' Monthly Magazine* (xiii. 138), says that it was taken in a garden in the *Alma Road* and at the time of

SPHINGIDÆ (continued)

writing was in the collection of G. T. Porritt, Esq., of Leeds

Deilephila lineata, F. (livornica, Esp.). *Cheshunt Street* (Boyd)

Mr. Boyd informs me that the specimen was captured on August 25th, 1868

- *galii*, Rott. *Haileybury*, 'once' (Bowyer); one at *Cheshunt Street*, August 12th, 1870 (Boyd)

Sphinx ligustri, L. *St. Albans*, more numerous than usual in 1900 (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant, Matthews); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Spencer, Wigg); *Tring*, larvæ (Elliman); *Hemel Hempstead* (Wilson); *Bishop Stortford* (Taylor, Mellows); *Royston* (A. H. Kingston); *Cheshunt* (Boyd)

The last-named observer marks this species as 'scarce' in his district, while Mr. Matthews reports it as being common in the larval state near *Hitchin*, where privet abounds. The Hon. L. Walter Rothschild showed me a nearly black variety which was bred from a larva taken at *Hemel Hempstead* in 1890 by Arthur Wilson

- *convolvuli*, L. *St. Albans* (A. E. G.); *Watford* (Cottam, Spencer); *Hitchin* (Lawford, Durrant); *Sandridge* (Griffith); *Baldock* (Durrant, *Entomologist*, xiv. 235); *East Barnet* (Gillum); *Tring* (Hon. L. Walter Rothschild); *Stevenage* (Matthews); *Cheshunt Street*, occasionally (Boyd)

This is a species which is very irregular in its appearance. Mr. Cottam records the occurrence of eight specimens at *Watford* in 1875; several were captured in *St. Albans* in 1877, and I again had *S. convolvuli* brought to me in 1892. The Hon. L. Walter Rothschild informs me that five or six were taken at *Tring* in 1899 and one specimen a few years previously. At *Stevenage* Mr. Matthews can only hear of its being seen once

Acherontia atropos, L. *St. Albans*, larvæ (A. E. G.); *Watford* (J. H. James, *Transactions of the Watford Natural History Society*, i. 64); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Lilley* (Rev. P. H. Jennings, *Entomologist*, ii. 325); *Tring* (Minall, Elliman, Hon.

INSECTS

SPHINGIDÆ (continued)

L. Walter Rothschild); *New Barnet* (H. C. Regnart, *Entomologist*, xxx. 18); *East Barnet*, pupæ (Bowden); *Stevenage* (Matthews); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)

Considerable numbers of the larvæ and pupæ are sometimes found in potato fields, and in the Haileybury School List the imago is recorded to have come to 'light.' Mr. Minall's specimen was taken at rest on a telegraph post in *Aylesbury Road*, *Tring*, and is now in the Hon. L. Walter Rothschild's collection

Smerinthus populi, L. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant, Latchmore); *Haileybury* (Bowyer); *Hertford* (Simmons, *Entomologist*, vi. 316); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *East Barnet* (Gillum); *Tring* (Hon. L. Walter Rothschild, Elliman); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

The late Mr. Latchmore reported that in 1892 the larvæ of *S. populi* and *S. ocellatus* were unusually abundant in the *Hitchin* district. The Hon. L. Walter Rothschild possesses a remarkably pale yellow variety without markings of *S. populi* bred at *Tring* in 1900

— *ocellatus*, L. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant, Latchmore); *Haileybury* (Bowyer); *Hertford* (Stephens); *Watton-at-Stone* (Hodges, *Entomologist*, vii. 233); *Nascot Wood* (Cutts); *Watford* (Spencer, Cutts); *East Barnet* (Gillum); *Tring* and *Wilstone reservoir* (Elliman); *Bishop Stortford* (Taylor, Mellows); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Mr. Elliman finds the larvæ of this species pretty freely in the *Tring* district, but chiefly about *Wilstone reservoir*. Mr. Arthur Lewis of *St. Albans* possesses an interesting specimen, which appears to be a hybrid between this species and *S. populi*

Dilina tilia, L. *St. Albans*, *Harpندن* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *Bushey* (Cutts); *Watford* (Heaton, Wigg); *East Barnet* (Gillum); *Tring* (Hon. N. Charles Rothschild); *Bishop*

SPHINGIDÆ (continued)

Stortford (Taylor, Mellows); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

The Hon. N. Charles Rothschild figures and describes in *Entomologist*, xxvii. 50, a very curious aberrant form (male) bred in 1893 from a larva found at *Tring* in September, 1892. A very yellow variety was found at *St. Albans* and brought to me in 1888

NOTODONTIDÆ

Pygæra pigra, Hufn. (reclusa, F.). *East Barnet* (Gillum); *Cheshunt Marsh* (Boyd)

Scarce

— *curtula*, L. *Sandridge* (Griffith)

Notodonta ziczac, L. *Sandridge* (Griffith); *Hitchin* (Durrant, Gatward); *Haileybury* (Bowyer), 'Heath, Hailey Lane,' School List; *Watford* (Heaton); *Bushey*, electric light, 1900 (V. P. Kitchin); *Wilstone reservoir* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Taken twice at *Haileybury*; scarce round *Cheshunt*. Mr. Gatward has taken the larvæ on a weeping willow at *Hitchin*

— *dromedarius*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Watford* (Spencer); near *Berkhamsted* (Rev. H. Harpur Crewe, *Zoologist*, x. 3,625); *Little Tring reservoir* (Elliman)

Drymonia dictæoides, Esp. *Hitchin* (Durrant); *Haileybury* (Stockley); *East Barnet* (Bowden); *Tring* (Hon. L. Walter Rothschild)

Rare. Mr. Stockley says this insect has not been taken for a long time

— *tremula*, Cl. (dictæa, Esp.). *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Watford* (Spencer, Heaton); *Hemel Hempstead* (B. Piffard); near *Berkhamsted*, larvæ (Rev. H. Harpur Crewe, *Zoologist*, x. 3,625); *Wilstone reservoir* (Elliman); *Cheshunt Marsh* (Boyd)

When the *Haileybury* School List was published in 1888 this had been taken three times at 'light.' Mr. Stockley writes that four larvæ were taken in 1899. Mr. Spencer took one larva at *Watford*. Mr. Boyd describes it as scarce at *Cheshunt Marsh*

— *trepida*, Esp. *Sandridge* (Griffith); *Haileybury* (Bowyer); near *Berk-*

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NOTODONTIDÆ (continued)

hamsted, larvæ (Rev. H. Harpur Crewe, *Zoologist*, x. 3,625); *Tring* (Le Quesne)

This species has been taken once at 'light' at *Haileybury*. The Rev. H. Harpur Crewe records in *Zoologist*, xi. 4,037, 'two larvæ beaten off oak in July, Herts'

Drymonia trimacula, Esp. (*dodonæa*, Hb.). *Sandridge* (Griffith); *Haileybury* (Bowyer)

Taken occasionally at *Haileybury* — *chaonia*, Hb. *Sandridge* (Griffith); *Haileybury* (Bowyer), 'once on *Heath*,' School List; *Bushey* (Cottam)

Rev. H. Harpur Crewe says: 'Two larvæ beaten from oak in July, Herts' (*Zoologist*, xi. 4,037)

Stauropus fagi, L. *Haileybury* (Bowyer); *Watford* (Cottam); *Tring Park* (Hon. L. Walter Rothschild); *Base Hill, Broxbourne Woods* (Boyd)

The *Haileybury* School List says that *S. fagi* has been taken twice on the *Heath*; Mr. Stockley records it twice in 1899. Mr. Cottam says: 'On July 6th [1899] a fine fresh male flew into my dressing-room, attracted by the incandescent gas light. The following night another came to the window, which happened to be shut, and before I could open it the insect flew off' (*Entomologist*, xxxii. 237). The Hon. L. Walter Rothschild reports that he has had plenty of larvæ of *S. fagi* off beech trees in the park, but has never succeeded in rearing them. Mr. Boyd has taken one specimen at *Base Hill*

Pterostoma palpina, L. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Cutts, Spencer, Cottam); near *Berkhamsted*, larvæ (Rev. H. Harpur Crewe, *Zoologist*, x. 3,625); *Tring* (Le Quesne); *Wilstone reservoir* (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

The Rev. H. Harpur Crewe also records rearing 'three from larvæ on poplar, Herts' (*Zoologist*, xi. 4,037). Generally a scarce species, but Mr. Taylor finds it to be common at *Bishop Stortford*

Odontosia camelina, L. *Bricket Wood* (Spencer, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant);

NOTODONTIDÆ (continued)

Haileybury (Bowyer); *East Barnet* (Gillum); *Nascot Wood* and *Bushey* (Cutts); *Watford* (Cottam, Spencer, Wigg); *Bushey Heath* (Barraud); *Tring* (Elliman, Goodson); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)

Mr. Elliman reports that this species is very abundant in the beech woods, and the Rev. H. Harpur Crewe, who worked in the same district, found the larvæ to be very plentiful (*Zoologist*, x. 3,625). Taking the county generally it cannot be described as an abundant species, though Mr. Barraud has taken seven specimens at 'light' at *Bushey Heath*. Mr. Spencer bred it from ova found at *Bricket Wood*. It is described by Mr. Boyd as being scarce round *Cheshunt*

Odontosia cuculla, Esp. (*cucullina*, Hb.). *Tring*, larvæ (Greene, *Entomologists' Annual*, 1857, p. 114)

Cerura vinula, L. *St. Albans* and *Harpden*, larvæ (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Totteridge* (S. C. Curtis, *Entomologist*, xi. 252); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Bricket Wood* (Cottam); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Generally plentiful

— *bifida*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Heaton); *Wilstone, Miswell* and *Tring*, empty pupa cases (Elliman); *Cheshunt* (Boyd)

Scarce. Mr. Spencer reared *C. bifida* from ova found on aspen. Taken once at *Haileybury*

— *furcula*, L. *Sandridge* (Griffith); *Hitchin* (Durrant, Latchmore); *Haileybury* (Bowyer), 'Heath,' School List; *Hertford* (Stephens); *Watford* (Spencer, Heaton, Wigg); *Wilstone* (Elliman); *Tring*, at 'light' (Hon. L. Walter Rothschild); *Cheshunt* (Boyd)

Scarce

Phalera bucephala, L. Common everywhere

SATURNIADÆ

Saturnia pavonia, L. (*carpini*, Schiff.). *St. Albans* (A. Lewis, A. E. G.); *Hitchin* (Durrant); *Haileybury*

INSECTS

SATURNIADÆ (continued)

(Bowyer); *Colney Heath* (Pilbrow); *Brown's Lane, Tring* (Hon. L. Walter Rothschild); *Bishop Stortford* (Taylor, Mellows); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

Fairly common. The larvæ are often abundantly met with

LASIOCAMPINA

DREPANIDÆ

Cilix glaucata, Sc. (spinula, Schiff.). *St. Albans* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Bowden); *Bushey* (Cutts); *Watford* (Spencer, Heaton, Wigg); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Hemel Hempstead* (B. Piffard); *Stevenage* (Matthews); *Cheshunt* (Boyd)

Reported by most of the observers to be common at 'light'

Falcaria lacertinaria, L. (lacertula, Schiff.). *Sandridge* (Griffith); *Haileybury* (Bowyer); *Oxhey Wood* (Cutts); *Bushey Heath* (Barraud)

Occasionally met with

— *falcatoria*, L. (falcula, Schiff.). *Haileybury* (Bowyer); *Hertford* (Stephens); *Watford* (Spencer); *Bushey Heath* (Barraud); *Berkhamsted* (Goodson)

Not of frequent occurrence

Drepana harpagula, Esp. (sicula, Hb.). *Hitchin* (Durrant); *Tring* (Goodson)

— *binaria*, Hufn. (hamula, Esp.). *Hoddesdon* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Wigg, Spencer); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Hon. N. Charles Rothschild, Goodson); near *Bury Green, Bishop Stortford* (Mellows); *Waltham Cross* (Boyd)

Several of the recorders have only taken this insect once

— *cultraria*, F. (unguicula, Hb.). *Ashbridge* (A. E. G.); *Watford* (Spencer, Heaton); *Tring* (Hon. N. Charles Rothschild, Elliman)

Mr. Elliman reports that this species is common in the beech woods

LASIOCAMPIDÆ

Lasiocampa quercus, L. *St. Albans* and *Welwyn* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford*

LASIOCAMPIDÆ (continued)

(Stephens); *East Barnet* (Gillum); *Tring* (Le Quesne); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

Formerly much more abundant round *St. Albans* than it is now; common at *Haileybury* and *Stevenage*; rather scarce at *Bishop Stortford* and scarce at *Cheshunt*. Mr. Taylor reports that he reared larvæ which did not hibernate through the severe winter of 1894-95 but fed on ivy, and turned out to be very fine dark specimens

Eriogaster populi, L. *St. Albans* (A. Lewis, A. E. G.); *Harpenden* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* and *Knebworth* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Cutts, Cottam, Spencer); *Bushey Heath* (Barraud); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Mellows); *Cheshunt* (Boyd)

Fairly abundant at 'light,' especially at *Watford*. At *Tring* Mr. Elliman has only taken one dead specimen in a spider's web at the station. Scarce at *Bushey Heath* and *Cheshunt*

— *lanestris*, L. *Harpenden Common* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hertford* (Stephens); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Generally common

— *rubi*, L. *Hertford* (Stephens); *East Barnet* (Gillum); *Berkhamsted Common* (Hon. L. Walter Rothschild); *Stevenage* (Matthews)

Rare

— *cratægi*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Bushey* (Cutts); *Watford* (Spencer); *Tring* (Elliman); *Cheshunt* (Boyd)

Not common; sometimes taken at 'light,' but most of the observers have fed the larvæ

Clisiocampa castrensis, L. *East Barnet* (Gillum); *Bishop Stortford* (Mellows)

Each single captures

— *neustria*, L. Generally met with abundantly everywhere

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LASIOCAMPIDÆ (continued)

Odonestis potatoria, L. *St. Albans* and *Wheatthampstead*, larvæ (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Clothall* and *Bushey* (Cutts); *Watford* (Spencer); *Oxhey* (H. Rowland-Brown); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

A common species

Gastropacha quercifolia, L. *St. Albans* (A. Lewis, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Bowden); *Watford* (Cottam, V. P. Kitchin, A. Stoyel); *Bushey Heath* (Barraud); *Shire Lane, Tring* (S. W. Jenney, jun.); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Abundant in 1890 in *Watford* and *St. Albans*. At the latter place a railway employé took a considerable number both on the street lamps and at the signal box at the station in the early morning. The larvæ are taken commonly at *Haileybury*, *Stevenage* and *Bishop Stortford*; one perfect insect taken at *Tring* and one at *Bushey Heath*. Occurs at 'light' most years in the *Cheshunt* district

PAPILIONINA

NYMPHALIDÆ

Argynnis paphia, L. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Longcroft* and *Brown's Lane, Tring* (Elliman); *Hitch Wood* and other woods, *Stevenage*, sometimes very common (Matthews)

The Hon. L. Walter Rothschild considers that the three larger species of *Argynnis* are much scarcer than formerly

- *adippe*, L. *Sandridge* (Griffith); *Tring Woods* (Elliman)
- *aglaia*, L. *Haileybury* (Bowyer); near *Grove Wood, Tring* (Le Quesne); *Brown's Lane, Tring* (Hon. L. Walter Rothschild); *Bishop Stortford* (Mellows)

Mr. Elliman, who reports Mr. Le Quesne's captures, writes with reference to the two last-named species

NYMPHALIDÆ (continued)

that *A. adippe* appears to be much more plentiful than *A. aglaia* in the *Tring Woods*. Mr. Mellows has seen *A. aglaia* twice in *Long Meadow, Bishop Stortford*, in 1895 and in 1896

Argynnis lathonia, L. *Hertford* (Stephens, *Illustrations of British Entomology*, i. 38, 1828)

- *euphrosyne*, L. *Bricket Wood, Ashridge* and *Brocket Hall* (A. E. G.); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Norton Green Woods*, common, (Matthews); *Bishop Stortford* (Mellows); *Oxhey Wood* (H. Rowland-Brown)

This, the most abundant of the Hertfordshire fritillaries, often flies in considerable numbers in woodlands in May and June

- *selene*, Schiff. *Bricket Wood*, sparingly (A. E. G.); *Sandridge* (Griffith); *Tring* (Elliman); *Norton Green Woods*, common (Matthews)

This insect is not so abundant as the preceding species and usually appears later

Melitæa aurinia, Rott. (*artemis*, Hb.). 'Taken at *Knebworth Wood* by Mr. B. Christian two or three years ago' (Durrant, in *Transactions of the Hertfordshire Natural History Society*, iii. 266); *Haileybury* (Bowyer)

Mr. Stockley informs me that *M. aurinia* has been three times recorded at *Haileybury* in the last three years. Newman, in his *Illustrated Natural History of British Butterflies and Moths*, gives *Drayton Beauchamp* as a locality for this species on the authority of the Rev. H. Harpur Crewe. Mr. Elliman believes that the Rev. H. H. Crewe's insects were taken in Bucks; at any rate it must have been close to the border, and it is very doubtful if this may be claimed as a Hertfordshire record

Vanessa c-album. *Hertford*, abundant prior to 1833 (Stephens, in *Illustrations of British Entomology*, i. 42); 'Reported three or four times near *Broxbourne*' (Stockley)

Mr. Arthur Lewis tells me that when a boy he saw *V. c-album* near the old *Cotton Mills* at *St. Albans*

- *urticæ*, L. Generally distributed throughout the county
- *polychloros*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Dur-

INSECTS

NYMPHALIDÆ (continued)

rant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Bishop Stortford* (Taylor, Mellows); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Carpenders* (H. Rowland-Brown)

This species appears to be decreasing in abundance. Twenty years ago I used to take it in considerable numbers, chiefly on the north side of *St. Albans*, but I have not now seen it for a long time. Mr. Stockley writes from *Haileybury* that it was formerly obtained annually, but has not been caught for three years. Mr. H. Rowland-Brown in a note attached to his *Carpenders* record says 'not seen of late years.' Mr. Boyd reports it is 'sometimes common' at *Cheshunt*. Mr. Matthews at *Stevenage* only meets with it occasionally, two or three a season. Writing to me in 1893, the late Mr. Frank Latchmore of Hitchin tells the same story of its disappearance. He says: 'Formerly this insect was common at *Ickleford*. The chrysalides were to be seen hanging from the coping of the walls near the church opposite some lime trees. I have not seen a pupa case at that spot for some years.' It is much to be regretted that this handsome insect seems to be gradually disappearing from Hertfordshire

Vanessa io, L. *St. Albans*, *Brocket Hall* and *Berkhamsted Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (R. T. Andrews); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Bushey Heath*, 'seems to be disappearing' (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); *West Hyde* (H. Rowland-Brown); *Royston* (A. H. Kingston)

— *antiopa*, L. *St. Albans* (Vincer); between *Watford* and *St. Albans*, 1855 (Humphries, *Transactions of the Watford Natural History Society*, ii. 70); *Hertford* (Stephens, *Illustrations of British Entomology*, i. 45); *Hoddesdon*, 1875 (Cottam, *Transactions of the Watford Natural History Society*, ii. 19); *Brickendon* near *Hertford* (W. Summers, *Entomologist*, vi. 216); *Stanstead* (Horley, *ibid.*); *Hitchin* (*Entomologists' Monthly Magazine*, ix. 107); *Southgate*, at 'sugar' (Dymond);

NYMPHALIDÆ (continued)

Tring (Hon. L. Walter Rothschild); *Hatfield* (F. W. F.)

This very uncertain insect was seen three times in Hertfordshire in 1900. When riding not far from the entrance to *Brown's Lane, Tring*, during the first week in September the Hon. L. Walter Rothschild, M.P., saw *V. antiopa* fly over him. On October 1st the late Mr. H. E. Vincer, one of the masters at the *Hatfield Road Board School, St. Albans*, captured a specimen of this insect fluttering in the window of one of the classrooms. It passed into the possession of Mr. J. Tomlin, another of the masters in the same school, who lent it for exhibition at a meeting of the Hertfordshire Natural History Society on March 26, 1901. 'F. W. F.' records in *Entomologist*, xxxiii. 303, the capture near *Hatfield* of a fine specimen about October 10th

Vanessa atalanta, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); *West Hyde* (H. Rowland-Brown); *Royston* (A. H. Kingston)

— *cardui*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Heaton, Wigg); *Tring* and *Wilstone reservoir* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Bishop Stortford* (Mellows); *Oxhey* (H. Rowland-Brown); *Royston* (A. H. Kingston)

This insect is irregular in its appearance, being very plentiful in some seasons but very scarce in others

Apatura iris. *Hertford* (Stephens, July, 1833, *Illustrations of British Entomology*, iv. 381)

SATYRIDÆ

Melanargia galatea, L. *Watford*, 1878 (Perkins, *Transactions of the Watford Natural History Society*, ii. 67); *Woodcock Hill, Elstree* (F. Bond, *Newman's Illustrated Natural History of British Butterflies and Moths*, 79); *Letchworth* (Knaggs, *Entomologists' Weekly Intelligencer*, ii. 153); *Dancer's End, Tring* (A. T. Goodson)

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SATYRIDÆ (continued)

Parage ægeria, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer); near *Stubbing's Wood*, *Tring* (Foulkes); *Stevenage* (Matthews)

Mr. Elliman reports that *P. ægeria* is not at all abundant in the *Tring* district, though Mr. Le Quesne and he have taken it rather plentifully in *Hengrove Wood* and towards *Wendover Hall* on the Bucks side of the county boundary. Mr. Matthews finds it to be fairly common near woods in the neighbourhood of *Stevenage*

— *megæra*, L. *St. Albans* and *Knebworth* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Wigg); *Tring* (A. M. Brown); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Railway bank*, *Oxhey* (H. Rowland-Brown)

Satyrus semele, L. *Haileybury Heath*, (School List).

'I am told it may be taken on the *Harpenden road* near *Childwick*' (Perkins, *Transactions of the Watford Natural History Society*, ii. 68). This neighbourhood is well known to me, but I have failed to find *S. semele* in the locality mentioned by Mr. Perkins

Epinephile tithonus, L. *St. Albans* and *Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Letchmore Heath* (H. Rowland-Brown)

— *janira*, L. *St. Albans*, *Elstree* and *Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (J. Hopkinson); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Stevenage* (Matthews); *Cheshunt* (Boyd); *South-west Herts*, common (H. Rowland-Brown)

— *hyperanthus*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Aldbury*, in wood above rifle butts (Cottam); *Tring*, very abundant in most of the woods, but apparently not straying far from them (Elliman); *Stevenage* (Matthews); *Cheshunt Marsh* (Boyd); *Royston* (A. H. Kingston)

SATYRIDÆ (continued)

Cænonympha pamphilus, L. This very common species is widely distributed through the county

ERYCINIDÆ

Nemeobius lucina, L. *Berkhamsted Common* (G. H. Raynor, *Newman's Illustrated Natural History of British Butterflies and Moths*, 105); *Dancer's End*, *Tring* (Hon. N. Charles Rothschild, Goodson)

LYCÆNIDÆ

Thecla rubi, L. *Hemel Hempstead* (B. Piffard); *Aldbury* (Cottam); on the downs above *Aldbury* and near *Pitstone*, sparingly (Hon. L. Walter Rothschild); *Tring* (Elliman)

The last-named observer says that *T. rubi* is usually abundant about the beech woods both in Herts and Bucks

— *w-album*, Kn. *Sandridge* (Griffith); *Knebworth* (Durrant); *Hemel Hempstead*, 'in thousands' (B. Piffard, *Entomologists' Monthly Magazine* xviii. 68); *Watford* (Spencer, Heaton); *Haileybury*, over a dozen specimens caught on the *Roman road*, 1900 (Stockley); *Bishop Stortford* (Taylor, Mellows, the latter observer recording the capture of about two dozen in *Long Meadow* in July, 1900); *Cheshunt* (Boyd)

The Hon. L. Walter Rothschild informs me that Mr. Jopling took three specimens at *Hemel Hempstead* in 1899

— *betulæ*, L. *Norton Green Woods*, about a mile south-west of *Stevenage*, not common (Matthews)

— *quercus*, L. *Bricket Wood*, *Radlett* and *Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Brown's Lane*, in abundance, and *Cow Lane*, near the station, *Tring* (Hon. L. Walter Rothschild); *Norton Green Woods* (Matthews); *Broxbourne Woods* (Boyd); *Oxhey Wood* (H. Rowland-Brown)

This is the most abundant of the Hertfordshire Hairstreaks. I have beaten the larvæ in considerable numbers from young oak trees at *Bricket Wood*

Chrysophanus minimus, Fuesl. (alsus, F.). *Hitchin* (Durrant); *Hertford* (Stephens); *Letchworth* (Knapp, *Entomologists' Weekly Intelligencer*, ii. 155);

INSECTS

LYCÆNIDÆ (continued)

Canal bank, *Tring* (Hon. L. Walter Rothschild, Cottam, Elliman); *Aldbury Owers* (Le Quesne); near *Hitchin* (Latchmore, Gatward); *Royston* (A. H. Kingston)

This, our smallest butterfly, appears to be particularly abundant at certain spots in the *Tring* district

Chrysophanus astrarche, Bgstr. (medon, Esp.; agestis, Hb.; artaxerxes, F.). *Bricket Wood* (Perkins); *Hitchin* (Durrant); *Hertford* (Stephens); *Watford* (Spencer, Heaton, Wigg); *Aldbury* (Cottam); *Aldbury Owers* and *Pitstone Hill* (Elliman); *Haileybury* (School List)

The Hon. L. Walter Rothschild informs me that this butterfly is abundant in the district between *Pitstone* and *Berkhamsted Common*

— *phlœas*, L. *St. Albans* and *Harpenden* (A. E. G.); *Bricket Wood* (Perkins); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Heaton, Wigg); *Aldbury Owers* and *Tring* (Elliman); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); common in south-west Herts (H. Rowland-Brown)

Mr. Elliman has noticed that *C. phlœas* is more plentiful in some years than others

— *argiolus*, L. *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hoddesdon* (Harley, *Entomologist*, v. iii.); *East Barnet* (Gillum); *Tring*, abundant (Hon. L. Walter Rothschild); *Bushey Heath* (Barraud); *Norton Green Woods* (Matthews); *Cheshunt* (Boyd); *Bury Green* and *Bishop Stortford* (Mellows); *Cassiobury Park* (H. Rowland-Brown)

— *corydon*, Pod. *New Farm, St. Albans* (A. Lewis); *Letchworth* (Knapp, *Entomologists' Weekly Intelligencer*, ii. 155); *Broxbourne Common* (Warner); *Aldbury Downs* (Cottam, Elliman); common on downs at *Dancer's End* (Hon. L. Walter Rothschild); *Royston Downs* (W. J. Hardy, A. H. Kingston); *Lilley Hoo* (Latchmore, Gatward); one at *Turnford* (Boyd)

This is a common insect on the downs in the north of the county, but it is also to be found occasionally at considerable distances from any extensive outcrop of the chalk, as at

LYCÆNIDÆ (continued)

Broxbourne Common, Turnford and St. Albans

Chrysophanus bellargus, Rott. (adonis, Hb.). *Aldbury* (Cottam, Hon. N. Charles Rothschild); *Dancer's End* (Hon. N. Charles Rothschild, A. T. Goodson); *Royston* (A. H. Kingston)

Mr. A. T. Goodson reports that both the spring and autumn broods occur in the *Tring* district

— *icarus*, Rott. The common blue occurs very generally throughout the county. Great variations in size are often to be noted

— *arion*, L. *Haileybury* (Bowyer, Stockley)

'One specimen shown up for the Cornthwaite Prize some years ago' (*Haileybury School List*, 1888). Mr. Stockley informs me that *C. arion* was seen by three collectors in 1898 and that he was within a yard of the specimen

PIERIDÆ

Colias hyale, L. *St. Albans* (A. E. G., Perkins, A. Lewis); *Sandridge* (Griffith); *Hitchin* (Durrant); *Watford* (Spencer, Cottam); *Tring* (A. M. Brown); between *Tring* station and *Marshcroft* (Elliman); near *Hastoe* (Hon. L. Walter Rothschild); on *Aldbury* side of railway (Cottam); near *Boxmoor* (Cottam); *Wormley* (Warner); *Royston* (A. H. Kingston)

— *edusa*, F. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Harpenden* (E. R. Chambers, J. J. Willis); *Hitchin* (Durrant); *Knebworth* (Brown, *Entomologist*, x. 139); *Watford* (Cottam, Spencer, Heaton, Wigg); *Haileybury* (School List); *East Barnet* (Gillum); *Southgate* (Dymond); *Tring* (Elliman, H. Rowland-Brown); on the *Aldbury* side of the station (Cottam); near *Boxmoor* (Cottam); *Radlett* (A. R. Heath, *Entomologist*, xxviii. 309); *Oxhey Wood* (H. Rowland-Brown); *Cheshunt* (Boyd); *Wormley* (Warner); *Hertford* (Graveson); *Ware* (G. H. Tite); *Royston* (A. H. Kingston)

var. *helice*. *St. Albans* (A. E. G.); *Brown's Lane, Tring* (Goodson); *Watford* (Cottam); *New River reservoirs*, one specimen (Boyd)

In papers read before the members of the Hertfordshire Natural History Society I have dealt at some length with the appearances of *C. edusa* and

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PIERIDÆ (continued)

C. hyale in the county (*Transactions Hertfordshire Natural History Society*, vii. 188 and viii. 77). During the past year, 1900, it has again occurred in some profusion. Among the records for that year are those of the Hon. L. Walter Rothschild, M.P., who writes: 'This autumn I have taken several *Colias hyale* within the county limits, though my brother and I and the Museum staff captured the bulk of some fifty we took nearer *Halton*, on the Bucks side of the border.' The same observer reports that *C. edusa* was taken near *Tring* windmill, and that Mr. A. T. Goodson captured a specimen of var. *helice*. Mr. A. Cottam's observations printed above were also made during the past season. Both species were fairly abundant at *New Farm* near *St. Albans*, *C. hyale* being perhaps the commoner, as seems to have been the case throughout the county. I observed *C. edusa* flying in *St. Peter's Street* in September

Gonepteryx rhamni, L. *St. Albans*, *Bricket Wood* and *Elstree* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Throcking* (Rev. C. W. Harvey); *East Barnet* (Gillum); *Watford* (Heaton, Wigg); *Tring* (Elliman); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Rickmansworth* and *Oxhey* (H. Rowland-Brown); *Royston* (A. H. Kingston)

Euchloe cardamines, L. *St. Albans*, *Bricket Wood*, *Harpenden Common* and *Brocket Hall* (A. E. G.); *Sandridge* (Griffith); *Haileybury* (Bowyer); *Hitchin* (Durrant); *Hertford* (Silvester); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Bishop Stortford* (Mellows); south and west Herts, generally distributed (H. Rowland-Brown)

Leucophasia sinapis, L. *Haileybury* (Bowyer); *Bishop Stortford* (Mellows)

The latter correspondent writes: 'I took one in the grounds of the Nonconformist Grammar School in 1894, but know of no others having been taken there'

Pieris napi, L. Common throughout the county

PIERIDÆ (continued)

Pieris rapæ, L. Common throughout the county

— *brassicæ*, L. Common throughout the county

Mr. Elliman observes that *P. brassicæ* occurs more especially near the woods in the *Tring* district

Aporia cratægi, L. One specimen of this insect is recorded in the School List as having been captured at *Haileybury*

HESPERIADÆ

Hesperia malvæ, L. (alveolus, Hb.). *St. Albans*, *Shenley*, *Bricket Wood* and *Brocket Hall* (A. E. G.); *Hemel Hempstead* (B. Piffard); *Sandridge* (Griffith); *Knebworth* (Durrant); *Haileybury* (Bowyer); *Hertford*, *Ben-geo* and *Brickendon* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Dancer's End* and between *Aldbury* and *Ivinghoe* (Hon. L. Walter Rothschild); *Broxbourne Woods* (Boyd); *Oxhey* (H. Rowland-Brown)

Mr. Elliman reports this species to be common in the *Tring* district, but more local than *H. tages*

— *tages*, L. *Bricket Wood*, *Aldbury* and *Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Tring* (Elliman); *Dancer's End* (Hon. L. Walter Rothschild); *Norton Green Woods* (Matthews); *Broxbourne Woods* (Boyd); *Oxhey* (H. Rowland-Brown)

Pamphila thaumas, Hufn. (linea, L.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Grove Wood*, *Tring* (Elliman)

— *sylvanus*, Esp. *Bricket Wood* and *Shenley* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Heaton, Wigg); *Aldbury* (Cottam); *Tring* (Elliman); *Norton Green Woods* (Matthews); *Oxhey* (H. Rowland-Brown)

— *comma*, L. *Roman road*, *Haileybury* (Stockley); *Berkhamsted Common*, one specimen (G. H. Raynor, Newman's *Illustrated Natural History of British Butterflies and Moths*, 173); *Aldbury Downs* (Hon. L. Walter Rothschild, Elliman, Cottam);

INSECTS

HESPERIADÆ (continued)

Dancer's End, Tring (Hon. L. Walter Rothschild)

Mr. Elliman says that this local chalk-loving species may be found in considerable numbers at certain spots in the neighbourhood of *Tring*

PYRALIDINA

PHYCITIDÆ

Salebria formosa, Hb. *Waltham Cross*, scarce (Boyd)

— *semirubella*, Sc. (*carnella*, L.). *Hertford* (Stephens)

— *betulæ*, Gz. *Sandridge* (Griffith)

Alispa angustella, Hb. *Cheshunt Street*, scarce (Boyd)

Hypochalcia ahenella, Hb. *Sandridge* (Griffith); *Cheshunt* (Boyd)

Phycita spissicella, F. (*roborella*, Zk.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Theobald's Park*, scarce (Boyd)

Ephistia elutella, Hb. *Sandridge* (Griffith); *Cheshunt*, common (Boyd)

— *calidella*, Gn. (*ficella*, Dgl.). *Cheshunt*, common in shops (Boyd)

Euzophera pinguis, Hw. *Cheshunt*, scarce (Boyd)

Homœosoma nimbella, Z. (*saxicola*, Vaughan). *Theobald's Grove station*, one specimen (Boyd)

Myeloides cribrella, Hb. *Hertford* (Stephens)

Eurhodope marmorea, Hw. *Sandridge* (Griffith)

— *advenella*, Zk. *Sandridge* (Griffith); *Cheshunt Street*, scarce (Boyd)

— *suavella*, Zk. *Cheshunt Marsh*, scarce (Boyd)

Acrobasis consociella, Hb. *Sandridge* (Griffith); *Base Hill* (Boyd)

— *zelleri*, Rag. (*tumidella*, Zk.). *Sandridge* (Griffith)

GALLERIADÆ

Meliphora grisella, F. (*alvearia*, F.). *St. Albans* (A. E. G.); *Battler's Green*, *Aldenham* (Miss Selby); *Sandridge* (Griffith); *Hitchin* (Durrant); *Waltham Cross*, scarce (Boyd)

Aphomia sociella, L. (*colonella*, L.). *St. Albans* and *Bamville Wood Farm*, *Harpden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath* (Barraud); common round *Cheshunt* (Boyd)

Galleria mellonella, L. (*cereana*, L.). *St. Albans* (A. E. G.); *Battler's Green*, *Aldenham* (Miss Selby); *Hitchin* (Durrant); *Bishop Stortford* (Taylor)

CRAMBIDÆ

Crambus pascuellus, L. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

— *pratellus*, L. *St. Albans*, *Bricket Wood* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hemel Hempstead* (B. Piffard); common round *Cheshunt* (Boyd)

— *culmellus*, L. *Bricket Wood*, *Radlett* and *Elstree* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

— *hortuellus*, Hb. *St. Albans*, *Hoddesdon* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

— *chrysonuchellus*, Sc. *Hertford* (Stephens); *Aldbury Downs* (Hon. N. Charles Rothschild)

— *falsellus*, Schiff. Used to occur at *Cheshunt* (Boyd)

— *pinellus*, L. (*pinetella*, L.). *Sandridge* (Griffith); *Hitchin* (Durrant); once at *Waltham Cross* (Boyd)

— *perlellus*, Sc. (*warringtonellus*, Stt.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); scarce round *Cheshunt* (Boyd)

— *inquinatellus*, Schiff. *Sandridge* (Griffith); *Broxbourne Woods*, common (Boyd)

— *geniculeus*, Hw. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)

— *tristellus*, F. *St. Albans*, *Bricket Wood* and *Symonds Hyde* (A. E. G.); *Sandridge* (Griffith); *East Barnet* (Gillum); *Bushey Heath* (Barraud); common round *Cheshunt* (Boyd)

— *selasellus*, Hb. Common round *Cheshunt* (Boyd)

Chilo phragmitellus, Hb. *Cheshunt Marsh*, scarce (Boyd)

PYRAUSTIDÆ

Acentropus niveus, Ol. Common on *Cheshunt Marsh* (Boyd)

Schœnobius gigantellus, Schiff. *Sandridge* (Griffith)

— *forcicellus*, Thnb. Common at *Cheshunt reservoir* and *Cheshunt Marsh* (Boyd)

Cataclysta lemnata, L. (*lemnalis*, Schiff.). *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Hemel Hempstead* (B. Piffard); *Tring* (Goodson); common on *Cheshunt Marsh* (Boyd)

Nymphula stagnata, Don. *Sandridge* (Griffith); *Bushey Heath* (Barraud);

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PYRAUSTIDÆ (continued)

- Bishop Stortford* (Taylor); *Cheshunt Marsh*, common (Boyd)
- Nymphula stratiotata*, L. *Tring* (Goodson); common on *Cheshunt Marsh* (Boyd)
- Hydrocampa nymphæata*, L. (*nymphæalis*, Schiff.). *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Berkhamsted* (Goodson); *Bishop Stortford* (Taylor); common on *Cheshunt Marsh* (Boyd)
- Antigastra catalaunalis*, Dup. *Cheshunt* (Boyd)
'New to Britain' (*Entomologists' Annual*, 1868, pp. 108, 109); 'still unique' (Boyd, 1901)
- Notarcha ruralis*, Sc. (*verticalis*, Schiff.). *St. Albans* and *Harpden Common* (A. E. G.); *Sandridge* (Griffith); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)
- Eurhynpara urticata*, L. (*urticalis*, Schiff.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)
- Phlyctænia crocealis*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); *Tring* (Goodson); common on *Cheshunt Marsh* (Boyd)
- *lutealis*, Hb. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *Tring* (Goodson)
- *ferrugalis*, Hb. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *prunalis*, Schiff. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- *fuscalis*, Schiff. *Hertford* (Stephens)
- *sambucalis*, Schiff. *Harpden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- Nomophila noctuella*, Schiff. (*hybridalis*, Hb.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- Psammotes hyalinalis*, Hb. *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Goodson)

PYRAUSTIDÆ (continued)

- Pyrausta nigrata*, Sc. *Tring* (Goodson)
- *purpuralis*, L. *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *East Barnet* (Gillum); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- *cespitalis*, Schiff. *Aldbury* and *Zouches*, *Dunstable* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *Broxbourne Woods*, common (Boyd)
- *olivalis*, Schiff. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- *verbascalis*, Schiff. *Hertford* (Stephens)
- Loxostege sticticalis*, L. *Tring* (Goodson)
- *verticalis*, L. (*cinctalis*, Tr.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- Scoparia resinea*, Haw. *Sandridge* (Griffith); *Bayford* (Boyd)
- *frequentella*, Stt. (*mercurella*, L.). *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *cratægella*, Hb. *Sandridge* (Griffith); *Tring* (Goodson); common round *Cheshunt* (Boyd)
- *truncicolella*, Stt. *Sandridge* (Griffith)
- *pallida*, Stph. *Sandridge* (Griffith)
- *cembræ*, Hw. *Sandridge* (Griffith); *Tring* (Goodson); scarce round *Cheshunt* (Boyd)
- *dubitalis*, Hb. *St. Albans*, *Wheatthampstead* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *ambigualis*, Tr. (*basistrigalis*, Knaggs). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *East Barnet* (Gillum); common round *Cheshunt* (Boyd)
- Mesographe forficalis*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath* (Barraud); *Tring* (Goodson); common round *Cheshunt* (Boyd)

PYRALIDIDÆ

- Endotricha flammealis*, Schiff. *Sandridge* (Griffith); *Bushey Heath*, one at 'light' (Barraud); scarce round *Cheshunt* (Boyd)
- Pyralis glaucinalis*, L. *St. Albans* and *Symonds Hyde* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens);

INSECTS

PYRALIDIDÆ (continued)

Bushey Heath, fairly common at 'light' (Barraud); common round *Cheshunt* (Boyd)

Pyalis costalis, F. (*fimbrialis*, Schiff.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); *Bushey Heath* (Barraud); *Oxhey* (H. Rowland-Brown); common round *Cheshunt* (Boyd)

— *farinalis*, L. *St. Albans* and *Bamville Wood*, *Harpندن Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *East Barnet* (Gillum); *Bushey Heath* (Barraud); *Tring* (Goodson); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)

Aglossa pinguinalis, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Oxhey* (H. Rowland-Brown); *Tring* (Goodson); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)

— *cuprealis*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); *East Barnet* (Gillum); scarce round *Cheshunt* (Boyd)

PTEROPHORIDÆ

Platyptilia acanthodactyla, Hb. Common round *Cheshunt* (Boyd)

— *gonodactyla*, Schiff. (*trigonodactylus*, Stt.). *Bricket Wood* and *Wheat-hampstead* (A. E. G.); common round *Cheshunt* (Boyd)

— *bertrami*, Rsl. *Sandridge* (Griffith)

— *ochrodactyla*, Hb. Two at *Waltham Cross* (Boyd)

— *rhododactyla*, F. *Hertford* (Stephens); one at 'light' at *Cheshunt Marsh* (Boyd)

Pterophorus pentadactylus, L. *St. Albans* and *Brookland's Farm*, *Elstree* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath* (Barraud); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)

— *spilodactylus*, Curt. *Sandridge* (Griffith); *Bushey Heath* (Barraud)

Marasmarcha phæodactyla, Hb. *Sandridge* (Griffith)

— *microdactyla*, Hb. *Hitchin* (Durrant)

Alucita monodactyla, L. (*pterodactyla*, Hb.). *St. Albans*, *Bricket Wood* and *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath* (Barraud); common round *Cheshunt* (Boyd)

— *lithodactyla*, Tr. *Sandridge* (Griffith)

Stenoptilia pterodactyla, L. (*fuscus*, Retz.; *fuscodactylus*, Hw.). *St. Albans*

PTEROPHORIDÆ (continued)

(A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

Stenoptilia zophodactyla, Dup. (*loewii*, Z.). *Sandridge* (Griffith)

— *bipunctidactyla*, Hw. *Sandridge* (Griffith); *Hitchin* (Durrant); scarce round *Cheshunt* (Boyd)

ORNEODIDÆ

Orneodes hexadactyla, L. (*polydactyla*, Hb.). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath*, fairly common (Barraud); *Hemel Hempstead* (B. Piffard); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)

PSYCHINA

ZEUZERIDÆ

Zeuzera pyrina, L. (*æsculi*, L.). *St. Albans* (A. E. G.); *Welwyn* (G. Buller); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Watford* (Spencer, Heaton); *Bushey Heath* (Barraud); *Hemel Hempstead* (B. Piffard); *Tring* (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd)

Often taken on the trunks of apple trees, in the wood of which the larvæ feed

ZYGÆNIDÆ

Zygæna filipendulæ, L. *Shenley* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *East Barnet* (Gillum); *Bushey* (Cutts); *Railway bank*, *Oxhey* (H. Rowland-Brown); *Canal bank*, *Tring* (Cottam, Elliman); *Dancer's End* (Hon. N. Charles Rothschild); *Norton Green* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd); *Royston* (A. H. Kingston)

Abundant in certain localities

— *loniceræ*, Esp. *Haileybury* (Bowyer), 'Skipper fields,' School List

— *trifolii*, Esp. *Hitchin* (Durrant); *Oughton Head* (F. Latchmore); *Hemel Hempstead* (B. Piffard); *Cheshunt* and *Bayford* (Boyd)

Mr. Matthews of Stevenage says this species is very local, and only to be found at *Oughton Head* near *Hitchin* amid the rushes and reeds on the swampy ground; very common there. Mr. Boyd describes it as a local species

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ZYGÆNIDÆ (continued)

- Procris geryon*, Hb. *Hitchin* (Durrant)
 — *statices*, L. Near *Green Street*, *Shenley* (A. E. G.); *Sandridge* (Griffith); *Knebworth* (Durrant); *Hertford* (Stephens); *Skipper fields*, *Haileybury* (Stockley); *Rouse Barn Lane*, *Watford* (Spencer, Heaton); *Railway bank*, *Oxhey* (H. Rowland-Brown); *Aldbury* (Hon. L. Walter Rothschild); *Goff's Oak* (Boyd); *Lilley Hoo* (Gatward)

A local species

TORTRICINÆ

EPIBLEMIDÆ

- Lobesia permixtana*, Hb. (*reliquana*, Wilk. non Hb.). *Sandridge* (Griffith)
Chrosis fuligana, Hw. (*ustulana*, Haw.). *Sandridge* (Griffith)
Bactra lanceolana, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
Eucosma salicella, L. *Hertford* (Stephens); common on *Cheshunt Marsh* (Boyd)
 — *semifasciana*, Hw. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *hartmanniana*, L. (*scriptana*, Hb.). Common round *Cheshunt* (Boyd)
 — *betulana*, Hw. } *Sandridge* (Griffith)
 — *capreana*, Hb. }
 — *variegana*, Hw. (*cynosbatella*, Wilk.). *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
 — *ochroleucana*, Hb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
 — *pruniana*, Hb. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *gentianana*, Hb. Common round *Cheshunt* (Boyd)
 — *sellana*, Hb. *Sandridge* (Griffith)
 — *fuligana*, Hb. (*ustulana*, Hw.). *Sandridge* (Griffith)
 — *nigricostana*, Hw. *Sandridge* (Griffith); *Hertford* (Stephens)
 — *profundana*, F. *Sandridge* (Griffith); *Hertford* (Stephens)
 — *purpurana*, Hw. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *rivulana*, Sc. (*conchana*, Hb.). *Sandridge* (Griffith)
 — *urticana*, Hb. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *lacunana*, Dup. (*herbana*, Gn.). *St. Albans*, *Bricket Wood*, *Radlett* and *Harpenden Common* (A. E. G.);

EPIBLEMIDÆ (continued)

- Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
Eucosma cespitana, Hb. *Sandridge* (Griffith)
 — *bifasciana*, Hw. *Hitchin* (Durrant)
 — *branderiana*, L. *Sandridge* (Griffith)
 — *striana*, Schiff. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
Evetria buoliana, Schiff. (*pinicolana*, Dbld.). *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

I take it that Griffith's and Durrant's records of 'pinicolana' and Boyd's of 'buoliana' each refers to this species

- *pinivorana*, Z. *Hitchin* (Durrant)
Enarmonia cruciana, L. (*angustana*, Hb.). *Sandridge* (Griffith); *Hertford* (Stephens); bred from *sallows* obtained at *Rickmansworth* (South, *Entomologist*, xxxi. 118); common at *Cheshunt Marsh* (Boyd)
 — *nanana*, Tr. (*occultana*, Wilk.). *Sandridge* (Griffith); *Wilbury Hill*, *Hitchin* (Durrant); *Church-gate*, *Cheshunt*, scarce (Boyd)
 — *pinicolana*, Z. (*occultana*, Wilk.). *Sandridge* (Griffith)
 Recorded as 'occultana'
 — *ratzeburgiana*, Rtz. *Sandridge* (Griffith)
 — *corticana*, Hb. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *oppressana*, Tr. Common locally, *Cheshunt Marsh* (Boyd)
 — *woeberiana*, Schiff. *St. Albans* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

- Tmetocera ocellana*, F. (*laricana*, Z.). *Sandridge* and *Royston* (Griffith)
Eudemis nævana, Hb. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
Ancylis lundana, F. *St. Albans*, *Harpenden Common* and *Bennett's End* (A. E. G.); *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *siculana*, Hb. *Sandridge* (Griffith)
 — *diminutana*, Hw. *Sandridge* (Griffith)
 — *mitterbacheriana*, Schiff. *Sandridge* (Griffith)
 — *lactana*, F. (*ramana*, Fröl.). *Sandridge* (Griffith)
Gypsonoma dealbana, Fröl. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *neglectana*, Dup. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *aceriana*, Dup. Common, *Cheshunt Marsh* (Boyd)

INSECTS

EPIBLEMIDÆ (continued)

- Cydia ramella*, L. (paykulliana, Wilk.).
Sandridge (Griffith); *Hemel Hempstead* (B. Piffard)
- *achatana*, F. Common round *Cheshunt* (Boyd)
- *strobilella*, L. *Hertford* (Stephens)
- *nigromaculana*, Hw. *Sandridge* (Griffith)
- Notocelia uddmanniana*, L. *St. Albans* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *rosæcolana*, Dbld. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *trimaculana*, Hw. (suffusana, Z.). *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *roborana*, Tr. *St. Albans* (A. E. G.); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *tetragonana*, Stph. *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith)
- Epiblema tripunctana*, F. *St. Albans*, *Bricket Wood*, *Harpندن* and *Symonds Hyde* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hemel Hempstead* (B. Piffard); common round *Cheshunt* (Boyd)
- *subocellana*, Don. (campoliliana, Tr.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *penkleriana*, F. R. *St. Albans*, *Bricket Wood* and *Harpندن* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant)
- *nisella*, Cl. (cinerana, Hw.). *Sandridge* (Griffith); scarce, *Broxbourne Woods* (Boyd)
- Mr. Griffith has both 'nisana' and 'cinerana' in his list
- *immundana*, F. R. } *Sandridge* (Griffith)
- *tetraquetrana*, Hw. }
- *tedella*, Cl. (hyrciniana, Wilk.) *Sandridge* (Griffith); *Wormley* (Boyd)
- *similana*, Hb. (bimaculana, Don.). *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith)
- *pflugiana*, Hw. (cirsiana, Z.). *Sandridge* (Griffith); *Hitchin* (Durrant)
- *trigeminana*, Stph. *Sandridge* (Griffith); *Hitchin* (Durrant)
- *brunnichiana*, Fröl. *St. Albans*, *Bricket Wood*, *Symonds Hyde* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hemel Hempstead* (B. Piffard)
- *fenella*, L. *Sandridge* (Griffith)
- *bilunana*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

EPIBLEMIDÆ (continued)

- Epiblema ophthalmicana*, Hb. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith)
- *solandriana*, L. } *Sandridge* (Griffith)
- *semifuscana*, Stph. }
- *sordidana*, Hb. *Sandridge* (Griffith); locally common, *Cheshunt Marsh* (Boyd)
- *expallidana*, Hw. Scarce round *Cheshunt* (Boyd)
- *scopoliana*, Hw. *Sandridge* (Griffith); *Wilbury Hill*, *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *cana*, Hw. (hohenwarthiana, Tr.; carduana, Gn.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); scarce round *Cheshunt* (Boyd)
- I take this to be the species called 'hohenwarthiana' by the recorders
- Hemimene alpinana*, Tr. (strigana, F.). *Hertford* (Stephens)
- *politana*, Gn. *Sandridge* (Griffith); *Wilbury Hill*, *Hitchin* (Durrant); *Northwood* and *Rickmansworth* (South, *Entomologist*, xxxi. 135); common round *Cheshunt* (Boyd)
- By this is meant the insect known to the recorders as *Dicrorhampha politana*
- *petiverella*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- var. *flavidorsana*. *Sandridge* (Griffith)
- *sequana*, Hb. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *simpliciana*, Hw. *Sandridge* (Griffith)
- *acuminatana*, Z. *Harpندن Common* (A. E. G.); *Sandridge* (Griffith); *Cheshunt reservoirs* (Boyd)
- *plumbagana*, Tr. *St. Albans*, *Harpندن Common* and *Hoddesdon* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *plumbana*, Sc. (ulicana, Gn.). *Sandridge* (Griffith); *Hitchin* (Durrant)
- Pammene flexana*, Z. (weirana, Dgl.). *Sandridge* (Griffith)
- *nitidana*, F. *Sandridge* (Griffith)
- *germarana*, Hb. (puncticostana, Wilk.). *Sandridge* (Griffith)
- *ochsenheimeriana*, Z. Once, *Waltham Cross* (Boyd)
- *rhediella*, Cl. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *splendidulana*, Gn. *Sandridge* (Griffith); once, *Theobald's Park* (Boyd)
- *fimbriana*, Hw. *Sandridge* (Griffith)

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EPIBLEMIDÆ (continued)

- Pammene argyrana*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *spiniana*, Dup. *Sandridge* (Griffith); scarce, *Cheshunt Marsh* (Boyd)
- *populana*, F. (*ephippiana*, Hb.). *Sandridge* (Griffith); scarce, *Cheshunt Marsh* (Boyd)
- *regiana*, Z. *Hitchin* (Durrant); scarce, *Theobald's Park* (Boyd)
- Laspeyresia roseticolana*, Z. *Sandridge* (Griffith)
- *ianthinana*, Dup. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *rufillana*, Wilk. *Sandridge* (Griffith)
- *perlepidana*, Hw. *Hitchin* (Durrant); *Broxbourne Woods* (Boyd)
- *internana*, Gn. *Asbridge* (A. E. G.)
- *compositella*, F. (*composana*, Hw.). *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *nigricana*, Stph. (*pisana*, Gn.). *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *ulicetana*, Hw. *St. Albans*, *Berkhamsted Common* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- Carpocapsa pomonella*, L. *St. Albans* and *Bamville Wood Farm*, *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Watford* (F. W. Silvester); common round *Cheshunt* (Boyd)
- *splendana*, Hb. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *grossana*, Hw. *Sandridge* (Griffith)
- Epinotia aurana*, F. (*mediana*, F.). *Sandridge* (Griffith)
- *albersana*, Hb. *Sandridge* (Griffith)
- *funebrana*, Hb. *Northwood* and *Rickmansworth* (South); sometimes common round *Cheshunt* (Boyd)

Mr. South says, in *Entomologist*, xxxi. 134: 'Specimens have been netted once at *Northwood* and once at *Rickmansworth*; in each instance the moth was flying along a hedge-row in which blackthorn grew, and both examples were in poor condition'

- *hypericana*, Hb. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

TORTRICIDÆ

- Rhacodia caudana*, F. *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); scarce round *Cheshunt* (Boyd)

TORTRICIDÆ (continued)

- Acalla hastiana*, L. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *sponsana*, F. (*favillaceana*, Hb.). *Bricket Wood*, *Wheathampstead* and *Watford* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *literana*, L. *Sandridge* (Griffith); scarce, *Broxbourne Woods* (Boyd); 'once met with in a lane adjoining *Moor Park*—the specimen was of the type form' (South in *Entomologist*, xxxi. 92)
- *logiana*, Schiff. (*tristana*, Hb.). *Sandridge* (Griffith)
- *variegana*, Schiff. *Harpenden Common* and *Watford* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *perplexana*, Barr. *Sandridge* (Griffith)
- *schalleriana*, L. (*comparana*, Hb.). *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *contaminana*, Hb. *Bricket Wood*, *Elstree*, *Wheathampstead*, *Watford* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *shepherdana*, Stph. *Hitchin* (Durrant)
- *aspersana*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); scarce, *Waltham Cross* (Boyd)
- *holmiana*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- Epagoge grotiana*, F. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Capua angustiorana*, Hw. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *favillaceana*, Hb. (*ochraceana*, Stph.). *Hitchin* (Durrant)
- Cacœcia podana*, Sc. (*pyrastrana*, Hb.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *cratægana*, Hb. (*roborana*, Hb.). *Bricket Wood* (A. E. G.); *Sandridge* (Griffith)
- *xylosteanæ*, L. *St. Albans*, *Bricket Wood*, *Wheathampstead* and *Bushey* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *rosana*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

INSECTS

TORTRICIDÆ (continued)

- Cacoecia sorbiana*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); *Bishop Stortford* (Taylor); common round *Cheshunt* (Boyd)
- *costana*, F. *Sandridge* (Griffith); scarce, *Cheshunt Marsh* (Boyd)
- *unifasciana*, Dup. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *lecheana*, L. *Sandridge* (Griffith); *Hertford* (Stephens); scarce round *Cheshunt* (Boyd)
- *musculana*, Hb. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- Pandemis corylana*, F. *Sandridge* (Griffith)
- *ribeana*, Hb. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- var. *cerasana*. *Hitchin* (Durrant)
- *heparana*, Schiff. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Tortrix forskaleana*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); *Goff's Oak* (Boyd)
- *bergmanniana*, L. *St. Albans* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *bifasciana*, Hb. (*audouinana*, Dup.). *Sandridge* (Griffith)
- *ministrana*, L. *St. Albans*, *Bricket Wood*, *Harpden* and *Symonds Hyde* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Broxbourne Woods* (Boyd)
- *conwayana*, F. *St. Albans* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); scarce round *Cheshunt* (Boyd)
- *lœflingiana*, L. *St. Albans*, *Bricket Wood* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *viridana*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *paleana*, Hb. (*icterana*, Fröl.). Near *Cheshunt station* (Boyd); *Rickmansworth* (South)
- Mr. South says: 'Larvæ often abundant in meadows at . . . *Rickmansworth*. The perfect insect is not so commonly in evidence' (*Entomologist*, xxxi. 91)
- *fosterana*, F. (*adjunctana*, Tr.). *St. Albans* and *Bricket Wood* (A. E. G.);

TORTRICIDÆ (continued)

- Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Tortrix diversana*, Hb. (*transitana*, Gn.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); two specimens, *Churchgate*, *Cheshunt* (Boyd)
- *chrysanthemana*, Dup. (*alternella*, Wilk.). *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *virgaureana*, Tr. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *incertana*, Tr. (*subjectana*, Gn.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *nubilana*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *pascuana*, Hb. *Sandridge* (Griffith); scarce, *Cheshunt Marsh* (Boyd)
- *conspersana*, Dgl. (*communana*, H.-S.). *Sandridge* (Griffith); *Hitchin* (Durrant)
- *longana*, Hb. (*ictericana*, Hw.). Common round *Cheshunt* (Boyd)
- *osseana*, Sc. (*pratana*, Hb.). *Royston* (Griffith)
- Isotrias hybridana*, Hb. *St. Albans*, *Bricket Wood*, *Harpden Common* and *Asbridge* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common locally round *Cheshunt* (Boyd)
- Exapate congelatella*, Cl. (*gelatella*, L.). *Sandridge* (Griffith); abundant in *All Saints' Churchyard*, *Hertford*, December 27th, 1882 (Stephens, *Illustrations of British Entomology*, iv. 235); scarce round *Cheshunt* (Boyd)
- Cheimatophila tortricella*, Hb. (*hyemana*, Hb.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); common in *Broxbourne* and *Wormley Woods* (Boyd)

PHALONIADÆ

- Lozopera francillana*, F. *Radlett* (A. E. G.)
- Phalonia zephyrana*, Tr. (var. *dubrisana*, Curt.). *Wheatthampstead* and *Asbridge* (A. E. G.); *Sandridge* (Griffith)
- *smeathmanniana*, F. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *badiana*, Hb. } *Sandridge* (Griffith)
- *cnicana*, Dbld. }
- *tesserana*, Tr. (*alcella*, Schulz.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *Cadmores Lane*, *Cheshunt*, scarce (Boyd)
- *rupicola*, Curt. *St. Albans* (A. E. G.)

A HISTORY OF HERTFORDSHIRE

PHALONIADÆ (continued)

- Phalonia nana*, Hw. *Sandridge* (Griffith)
 — *dubitana*, Hb. Scarce, *Waltham Cross* (Boyd)
Chlidonia baumanniana, Schiff. (*hartmanniana*, Cl.). *Harpenden Common* (A. E. G.); *Sandridge* (Griffith)
 — *subbaumanniana*, Wilk. *Sandridge* (Griffith); *Wilbury Hill, Hitchin* (Durrant)
Eupoecilia maculosana, Hw. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hemel Hempstead* (B. Piffard)
Commophila rugosana, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); *Hemel Hempstead* (B. Piffard); scarce round *Cheshunt* (Boyd)
Euxanthia angustana, Tr. *Sandridge* (Griffith)
 — *zoegana*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
 — *hamana*, L. *St. Albans, Wheathampstead and Zouches, Dunstable* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Rickmansworth and Chorley Wood* (South, *Entomologist*, xxxi. 136); common round *Cheshunt* (Boyd)

TRYPANIDÆ

- Trypanus coccus*, L. (*ligniperda*, F.). *Sandridge* (Griffith); *Hitchin* (Durrant, Latchmore); *Haileybury* (Bowyer), 'Heath,' School List; *East Barnet* (Gillum); *Bedmond* (F. W. Silvester); *Watford* (J. H. James, Heaton); *Colney Heath* (Pilbrow); *Tring* (Elliman); *Bishop Stortford* (Taylor, Mellows); *Oxhey* (H. Rowland-Brown); *Royston* (A. H. Kingston)

A most extraordinary capture of the larvæ of this destructive insect was made in 1892 in *Station Road, Hitchin*, and recorded by the late Mr. Frank Latchmore. Over 200 were taken wandering about a small walled garden in search of a place for pupation. Two or three young aspen trees in the garden were literally riddled with goat holes. A considerable number of these larvæ were sent to me, and I reared a series of perfect insects from them. This insect is too common throughout the county

TINEINA

ÆGERIADÆ

- Ægeria apiformis*, Cl. *Watford* (Heaton);

ÆGERIADÆ (continued)

- Colney Heath* (Pilbrow); *Hitchin* (Latchmore, Gatward)
 In 1893 the last-named observers reported this moth as being common at *Hitchin*. They obtained the pupæ from aspen trees in the spring
Ægeria crabroniformis, Lew. (*bembeciformis*, Hb.). *Sandridge* (Griffith); one near *Cheshunt station* (Boyd)
 [*Trochilium andreniformis*, Lasp.

This species which was taken in the garden of Drayton Lodge, *Tring*, by Mr. S. W. Jenney, jun., must, I regret to say, be removed from the Hertfordshire list, for Mr. Jenney informs me that the spot is in Buckinghamshire]

- *tipuliforme*, Cl. *St. Albans* (A. E. G.); *Hemel Hempstead* (B. Piffard); *Sandridge* (Griffith); *Hitchin* (Durrant); *Watford* (Heaton); *Haileybury* (Stockley); *Tring* (Elliman); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Cheshunt* (Boyd); *Bishop Stortford* (Mellows); *Royston* (A. H. Kingston)

This is a fairly abundant species, occurring in gardens among currant bushes

- *asiliforme*, Rott. (*cynipiformis*, Esp.). *Sandridge* (Cutts); *Haileybury* (School List); *Bayford* (Boyd)

In 1892 Mr. Cutts reported the capture of this insect by a friend of his at *Sandridge*. The *Haileybury* specimen was taken in the *Pavilion field*

- *myopiforme*, Bkh. *Hertford* (Stephens); *Haileybury* (Stockley); *Cheshunt* (Boyd)

Mr. Stockley informs me that he took three specimens of *T. myopiforme* one morning in 1898, but the insect has not been heard of again. Mr. Boyd describes the species as being common at *Cheshunt*

- *formiciforme*, Esp. *Norton* (Durrant); *Cheshunt Marsh* (Boyd)

In a note attached to Mr. Durrant's list Mr. A. F. Griffith states that gentleman had informed him that two specimens of this insect had been taken at *Norton* by Mr. Christian

- *ichneumoniforme*, F. A specimen of this insect was taken by Mr. Elliman in June, 1893, on the *Canal bank* near *Drayton Beauchamp*. As the *Wendover canal* crosses the county

INSECTS

ÆGERIADÆ (continued)

boundary close to Drayton it is doubtful whether the actual spot at which the capture was made is in Herts or Bucks, and it is with considerable hesitation that this species is included in the county list

GELECHIADÆ

- Paltodora cytisella*, Curt. *Base Hill* (Boyd)
Aristotelia hermannella, F. Common, *Waltham Cross* (Boyd)
 — *stipella*, Hb. (*næviferella*, Dup.). Common, *Waltham Cross* (Boyd)
 — *ericinella*, Dup. *Sandridge* (Griffith); *Base Hill* (Boyd)
 — *bifractella*, Dgl. } *Sandridge* (Griffith)
 — *atrella*, Hw. }
 — *tenebrella*, Hb. (*tenebrosella*, Z.). *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *lutulentella*, Z. One, *Cheshunt Marsh*, March, 1876, named by Stainton (Boyd)
 — *arundinetella*, Stt. *Cheshunt Marsh* (Boyd)
Stenolechia gemmella, L. (*nivea*, Hw.). *Sandridge* (Griffith)
 — *albiceps*, Z. (*albicapitella*, Dbld.). Scarce round *Cheshunt* (Boyd)
Ptocheuusa inopella, Z. (*paupella*, Z.). Common round *Cheshunt* (Boyd)
Aphanaula nanella, Hb. Common round *Cheshunt* (Boyd)
 — *leucatella*, L. Common round *Cheshunt* (Boyd)
Epitheatia mouffetella, Schiff. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
Anacamptis tæniolella, Z. *Sandridge* (Griffith); *Bayford*, scarce (Boyd)
 — *vorticella*, Sc. (*ligulella*, Z.). *Beaumont Green* near *Wormley* (Boyd)
 — *anthyllidella*, Hb. *Sandridge* (Griffith)
Gelechia domestica, Hw. *Sandridge* (Griffith); *Bancroft*, *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
 — *affinis*, Dgl. (*confinis*, Stt.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Burton Grange*, *Cheshunt* (Boyd)
 — *senectella*, Z. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *politella*, Stt. *Sandridge* (Griffith); *Turnford Lock*, two specimens (Boyd)
 — *terrella*, Hb. *St. Albans*, *Bricket Wood* and *Wheatbampstead* (A. E. G.); *Sandridge* (Griffith); *Wilbury Hill*, *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
 — *acuminatella*, Sirc. *Sandridge* (Griffith)

GELECHIADÆ (continued)

- Gelechia obsoletella*, F. R. Common, *Waltham Cross* (Boyd)
 — *maculea*, Hw. *Sandridge* (Griffith); *Dark Lane*, *Cheshunt* (Boyd)
 — *fraternella*, Dgl. *Sandridge* (Griffith); *Cheshunt Marsh*, scarce (Boyd)
 — *tricolorella*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *maculiferella*, Dgl. (*proxima*, Hw.; *proximella*, Stt.). *Sandridge* (Griffith)
 — *luculella*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); *Theobald's Park*, scarce (Boyd)
 — *scriptella*, Hb. *Hertford* (Stephens)
 — *fugitivella*, Z. Common round *Cheshunt* (Boyd)
 — *notatella*, Hb. *Sandridge* (Griffith); *Brookfield Lane*, *Cheshunt*, scarce (Boyd)
 — *triparella*, Z. *Sandridge* (Griffith)
 — *dodecella*, L. *Sandridge* (Griffith)
 — *vulgella*, Hb. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *nigra*, Hw. *Sandridge* (Griffith)
 — *pinguinella*, Tr. (*populella*, Hb.). *Sandridge* (Griffith); *Cheshunt Marsh*, common (Boyd)
 — *soroculella*, Hb. *Sandridge* (Griffith)
 — *rhombella*, Schiff. Common round *Cheshunt* (Boyd)
 — *malvella*, Hb. Scarce round *Cheshunt* (Boyd)
 — *lentiginosella*, Z. *Sandridge* (Griffith)
 — *mulinella*, Z. *Sandridge* (Griffith); *Broxbourne Woods*, common (Boyd)
 — *ericetella*, Hb. *Sandridge* (Griffith); *Broxbourne Woods*, common (Boyd)
Tachyptilia populella, Cl. Common round *Cheshunt* (Boyd)
Psoricoptera gibbosella, Z. *Sandridge* (Griffith)
Brachmia rufescens, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
Recurvaria cinerella, Cl. *Sandridge* (Griffith); *Hertford* (Stephens)
Ypsolophus semicostellus, Hb. (*parenthesella*, Hw.). *Sandridge* (Griffith)
 — *marginellus*, F. *Sandridge* (Griffith); *Cheshunt Street*, scarce (Boyd)
Anarsia spartiella, Schrk. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith)
Chelaria huebnerella, Don. (*conscriptella*, Hb.). *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens)
- ## CECOPHORIDÆ
- Carcina quercana*, F. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

A HISTORY OF HERTFORDSHIRE

ŒCOPHORIDÆ (continued)

- Cheimophila salicella*, Hb. *Sandridge* (Griffith)
Chimabache phryganella, Hb. *St. Albans* (A. E. G.); *Bayford* (Boyd)
 — *fagella*, F. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
Semioscopis steinkellneriana, Schiff. *St. Albans* (A. E. G.); *Hertford* (Stephens); *Cheshunt Street*, scarce (Boyd)
Enicostoma lobella, Schiff. *Sandridge* (Griffith); *Hitchin* (Durrant); *Flamstead End*, scarce (Boyd)
Depressaria costosa, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *assimilella*, Tr. *Sandridge* (Griffith)
 — *atomella*, Hb. (*scopariella*, Hein.). Common at *Cheshunt* and *Carnell's Green* (Boyd)
 — *liturella*, Schiff. (*flavella*, Hb.). *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
 — *arenella*, Schiff. *St. Albans*, *Bricket Wood*, *Wheathampstead* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
 — *propinquella*, Tr. *Hitchin* (Durrant)
 — *subpropinquella*, Stt. (*rhodochrella*, H.-S.). *Sandridge* (Griffith); *Hitchin* (Durrant); *Cheshunt* (Boyd)
 Mr. Boyd records the capture of both 'subpropinquella' and 'rhodochrella' at *Cheshunt*, the former being common and the latter scarce
 — *hypericella*, Tr. (*liturella*, Hb.). *Sandridge* (Griffith)
 — *ocellana*, F. *Cheshunt Marsh*, common (Boyd)
 — *conterminella*, Z. *Sandridge* (Griffith); *Cheshunt Marsh*, scarce (Boyd)
 — *yeatiana*, F. *Hertford* (Stephens)
 — *alstroemeriana*, Cl. *Sandridge* (Griffith); *Hitchin* (Durrant); scarce round *Cheshunt* (Boyd)
 — *angelicella*, Hb. *Sandridge* (Griffith)
 — *purpurea*, Hw. (*vaccinella*, Hb.). *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
 — *capreolella*, Z. *Churchgate*, *Cheshunt* (Boyd)
 — *ciliella*, Stt. *Bricket Wood* (A. E. G.); *Sandridge* (Griffith)
 — *applana*, F. (*applanella*, F.). *St. Albans*, *Bricket Wood* and *Wheathampstead* (A. E. G.); *Sandridge* (Griffith);

ŒCOPHORIDÆ (continued)

- Hitchin* (Durrant); common round *Cheshunt* (Boyd)
Depressaria zephyrella, Hb. (*granulosella*, Stt.). *Sandridge* (Griffith)
 — *badiella*, Hb. *Hertford* (Stephens)
 — *chærophylli*, Z. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *ultimella*, Stt. Scarce round *Cheshunt* (Boyd)
 — *pulcherrimella*, Stt. *Cheshunt Street* (Boyd)
 — *heracliana*, De Geer. *St. Albans* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
Harpella geoffrella, L. *St. Albans*, *Bricket Wood* and *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Dark Lane*, *Cheshunt*, common (Boyd)
Œcophora oliviella, F. *Hertford* (Stephens); scarce round *Cheshunt* (Boyd)
 — *sulphurella*, F. *St. Albans*, *Bricket Wood*, *Hatfield* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Bushey Heath* (Barraud); common round *Cheshunt* (Boyd)
Acompsia lunaris, Hw. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
 — *minutella*, L. Common round *Cheshunt* (Boyd)
 — *tinctella*, Hb. *Cheshunt Street*, scarce (Boyd)
 — *unitella*, Hb. *Cheshunt Street*, common (Boyd)
 — *flavifrontella*, Hb. *Dark Lane*, *Cheshunt*, scarce (Boyd)
 — *pseudospirella*, Stt. *St. Albans* and *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
 — *fuscescens*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

ELACHISTIDÆ

Coleophora fabriciella, Vill. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
 — *deauratella*, Z. *Sandridge* (Griffith); *Hertford* (Stephens)
 — *albitarsella*, Z. *Sandridge* (Griffith); west side of *Cheshunt Street* (Boyd)
 — *alcyonipennella*, Koll. *Sandridge* (Griffith); *Cheshunt Marsh* (?) (Boyd)
 — *paripennella*, Z. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *nigricella*, Stph. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
 — *siccifolia*, Stt. Sometimes common round *Cheshunt* (Boyd)

INSECTS

ELACHISTIDÆ (continued)

- Coleophora gryphipennella*, Bch. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *bicolorella*, Stt. *Sandridge* (Griffith)
- *viminetella*, Z. *Sandridge* (Griffith); *Cheshunt Marsh*, common (Boyd)
- *fuscedinella*, Z. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *lutipennella*, Z. *Sandridge* (Griffith)
- *badiipennella*, Dup. *Sandridge* (Griffith); *Cheshunt Marsh* (Boyd)
- *solitariella*, Z. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *laricella*, Hb. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *juncicolella*, Stt. *Base Hill, Wormley* (Boyd)
- *lixella*, Z. *Sandridge* (Griffith)
- *anatipennella*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *ibipennella*, Z. } *Sandridge* (Griffith)
- *palliatella*, Zk. }
- *currucipennella*, Z. *Sandridge* (Griffith)
- *genistæ*, Stt. *Base Hill, Wormley* (Boyd)
- *discordella*, Z. *Sandridge* (Griffith); *Hertford* (Stephens)
- *albicosta*, Hw. *Sandridge* (Griffith); *Churchgate, Cheshunt* (Boyd)
- *apicella*, Stt. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *lineolea*, Hw. *Sandridge* (Griffith); *Hitchin* (Durrant); *Cheshunt Street* and *Waltham Cross* (Boyd)
- *argentula*, Z. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *murinipennella*, Dup. *Sandridge* (Griffith); *Hertford* (Stephens)
- *cæspititiella*, Z. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Asychna modestella*, Dup. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Batrachedra præangusta*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Elachista cinereopunctella*, Hw. *Sandridge* (Griffith)
- *magnificella*, Tgst. Once in *Cheshunt Marsh* (Boyd)
- *gleichenella*, F. *Sandridge* (Griffith)
- *albifrontella*, Hb. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *luticomella*, Z. } *Sandridge* (Griffith)
- *atricomella*, Stt. }
- *alpinella*, Stt. (*monticola*, Wk.). *Sandridge* (Griffith)

ELACHISTIDÆ (continued)

- Elachista kilmunella*, Stt. One specimen, *Cheshunt Marsh* (Boyd)
- *poæ*, Stt. *Sandridge* (Griffith); *Cheshunt Marsh*, common (Boyd)
- *subnigrella*, Dgl. Common round *Cheshunt* (Boyd)
- *nigrella*, Hw. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *obscuraella*, Stt. } *Sandridge* (Griffith)
- *zonariella*, Tgst. }
- *megerlella*, Stt. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *biatomella*, Stt. *Sandridge* (Griffith); one specimen, *Waltham Cross* (Boyd)
- *rhynchosporella*, Stt. *Cheshunt Marsh* (Boyd)
- *cerusella*, Hb. *Sandridge* (Griffith); *Cheshunt Marsh*, common (Boyd)
- *triatomea*, Hw. *Sandridge* (Griffith)
- *rufocinerea*, Hw. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *cygnipennella*, Hb. (*argentella*, Cl.). *Harpden Common, Park Street* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Stephensia brunnichiella*, L. *Sandridge* (Griffith)
- Limnœcia phragmitella*, Stt. *Churchgate, Cheshunt*, scarce (Boyd)
- Anybia epilobella*, Roem. (*langiella*, Hb.). *College Road, Cheshunt* (Boyd)
- Chrysoclista linneella*, Cl. *Waltham Cross*, scarce (Boyd)
- *aurifrontella*, Hb. (*flavicaput*, Hw.). *Harpden Common* (A. E. G.); *Sandridge* (Griffith); *Cadmore Lane, Cheshunt*, common (Boyd)
- *atra*, Hw. (*hellerella*, Dup.). Common round *Cheshunt* (Boyd)
- Mompha raschkiella*, Z. *Sandridge* (Griffith)
- *decorella*, Stph. Scarce round *Cheshunt* (Boyd)
- *subbistrigella*, Haw. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *fulvescens*, Hw. (*epilobiella*, Schrk.). *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *ochraceella*, Curt. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- Heliozela sericiella*, Haw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *resplendella*, Stt. Scarce round *Cheshunt* (Boyd)

A HISTORY OF HERTFORDSHIRE

ELACHISTIDÆ (continued)

- Antispila pfeifferella*, Hb. *St. Albans* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Perittia obscurepunctella*, Stt. *Sandridge* (Griffith); *Hitchin* (Durrant); near *St. James' Church*, *Goff's Oak* (Boyd)
- Scythris grandipennis*, Hw. *Sandridge* (Griffith)
- *chenopodiella*, Hb. *Waltham Cross*, common (Boyd)
- Endrosis lacteella*, Schiff. (*fenestrella*, Stt.). *St. Albans*, *Bricket Wood*, *Harpenden Common* and *Aldbury* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Bushey Heath* (Barraud); common round *Cheshunt* (Boyd)
- Cataplectica fulviguttella*, Z. (*flavimaculella*, Stt.). *Sandridge* (Griffith); *Cheshunt Marsh*, common (Boyd)
- Schreckensteinia festaliella*, Hb. } *Sandridge*
Epermenia illigerella, Hb. } (Griffith)
- *chærophyllella*, Gz. Common round *Cheshunt* (Boyd)

PLUTELLIDÆ

- Prays curtisellus*, Don. *St. Albans* and *Wheatthampstead* (A. E. G.); *Sandridge* (Griffith); *Fairfield*, *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- var. *rusticus*. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Yponomeuta cognatellus*, Hb. (*evonymellus*, Sc.). *St. Albans*, *Radlett* and *Elstree* (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); *Cheshunt* and *Bayford*, scarce (Boyd)
- *padellus*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *plumbellus*, Schiff. *Sandridge* (Griffith); *Hertford* (Stephens); *Bayford* (Boyd)
- *vigintipunctatus*, Retz. *Cheshunt Street* (Boyd)
- Orthotælia sparganella*, Thnb. *Sandridge* (Griffith); *Cheshunt Marsh*, local (Boyd)
- Cerostoma caudella*, L. (*mucronella*, Sc.). *Sandridge* (Griffith)
- *xylostella*, L. (*harpella*, Schiff.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *lucella*, F. } *Sandridge* (Griffith)
— *alpella*, Schiff. }
— *sylvella*, L. } *Sandridge* (Griffith); scarce
— *costella*, F. } round *Cheshunt* (Boyd)
— *radiatella*, Don. *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens);

PLUTELLIDÆ (continued)

- phens); common round *Cheshunt* (Boyd)
- Cerostoma sequella*, Cl. } *Sandridge*
— *vittella*, L. } (Griffith)
- Plutella porrectella*, L. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Bayford* (Boyd)
- *cruciferarum*, Z. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Glyphipteryx fuscoviridella*, Hw. *St. Albans*, *Harpenden Common* and *Asbridge* (A. E. G.); *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *thrasonella*, Sc. (*cladiella*, Stt.). *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Cheshunt* (Boyd); 'cladiella,' scarce, *Cheshunt Marsh* (Boyd)
- *equitella*, Sc. Common round *Cheshunt* (Boyd)
- *fischeriella*, Z. *Sandridge* (Griffith); *Hertford* (Stephens); scarce round *Cheshunt* (Boyd)
- Choreutis myllerana*, F. (*scintilulana*, Hb.). *Cheshunt Marsh*, common (Boyd)
- Simæthis pariana*, Cl. *Hertford* (Stephens); scarce round *Cheshunt* (Boyd)
- *fabriciana*, L. (*oxyacanthella*, L.). *St. Albans*, *Wheatthampstead* and *Radlett* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)

TINEIDÆ

- Nepticula pomella*, Vaughan. *Sandridge* (Griffith)
- *pygmælla*, Hw. *Sandridge* (Griffith)
- *atricapitella*, Hw. (*ruficapitella*, Hw.). *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *basiguttella*, Hein. One mine, *Cheshunt Street* (Boyd)
- *anomalella*, Gz. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *minusculella*, H.-S. *Cheshunt Street* (Boyd)
- *oxyacanthella*, Stt. *Sandridge* (Griffith)
- *aurella*, F. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *gratiosella*, Stt. Common round *Cheshunt* (Boyd)
- *marginicolella*, Stt. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *hodgkinsoni*, Stt. *Cheshunt Street* (Boyd)
- *microtheriella*, Stt. } *Sandridge* (Griffith)
— *betulicola*, Stt. }
— *plagicolella*, Stt. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *luteella*, Stt. *Sandridge* (Griffith)

INSECTS

TINEIDÆ (continued)

- Nepticula tityrella, Stt. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- atricollis, Stt. *Cadmores Lane, Cheshunt*
(Boyd)
- angulifasciella, Stt. *Wormley* (Boyd)
- salicis, Stt. *Sandridge* (Griffith); com-
mon round *Cheshunt* (Boyd)
- floslactella, Hw. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- septembrella, Stt. *Sandridge* (Griffith);
common at *Flamstead End* (Boyd)
- catharticella, Stt. *Sandridge* (Griffith)
- trimaculella, Hw. *Sandridge* (Griffith);
scarce round *Cheshunt* (Boyd)
- subbimaculella, Hw. *Sandridge* (Grif-
fith); common round *Cheshunt* (Boyd)
- argyropeza, Z. *Sandridge* (Griffith)
- apicella, Stt. *St. Albans* (A. E. G.)
- pulverosella, Stt. *Sandridge* (Griffith)
- Trifurcula immundella, Z. (squamatella,
Stt.). *Sandridge* (Griffith)
- pallidella, Z. *Sandridge* (Griffith)
- Opostega salaciella, Tr. *Sandridge* (Grif-
fith); scarce round *Cheshunt* (Boyd)
- crepusculella, Z. *Sandridge* (Griffith);
scarce round *Cheshunt* (Boyd)
- Bucculatrix cristatella, Z. *Sandridge* (Grif-
fith)
- nigricomella, Z. (aurimaculella, Stt.).
Sandridge (Griffith); common round
Cheshunt (Boyd)
- frangulella, Grz. *Sandridge* (Griffith)
- boyerella, Dup. Common round *Ches-
hunt* (Boyd)
- ulmella, Z. *Sandridge* (Griffith); scarce
round *Cheshunt* (Boyd)
- cratægi, Z. *Sandridge* (Griffith); com-
mon round *Cheshunt* (Boyd)
- demaryella, Stt. *Sandridge* (Griffith)
- Lithocolletis roboris, Z. *Sandridge* (Grif-
fith)
- hortella, F. *Theobald's Park* (Boyd)
- sylvella, Hw. (acerifoliella, Z.). *Sand-
ridge* (Griffith); common round *Ches-
hunt* (Boyd)
- cramerella, F. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- tenella, Z. *Sandridge* (Griffith); com-
mon round *Cheshunt* (Boyd)
- alnifoliella, Dup. (alniella, Z.). *Sand-
ridge* (Griffith); common round *Ches-
hunt* (Boyd)
- ulmifoliella, Hb. *Sandridge* (Griffith);
Hitchin (Durrant); scarce round
Cheshunt (Boyd)
- spinolella, Dup. *Sandridge* (Griffith);
scarce round *Cheshunt* (Boyd)
- viminetorum, Stt. Common at *Ches-
hunt Marsh* (Boyd)

TINEIDÆ (continued)

- Lithocolletis salicicolella, Sirc. } *Sandridge*
— lantanella, Schrk. } (Griffith)
- pomifoliella, Z. *Sandridge* (Griffith);
Cheshunt (Boyd)
- Mr. Boyd says 'pomifoliella' is now
divided into several species, of which
several occur in the *Cheshunt* district
- cerasicolella, H.-S. *Waltham Cross*
(Boyd)
- spinicolella, Stt. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- faginella, Z. Common round *Cheshunt*
(Boyd)
- carpinicolella, Stt. *Sandridge* (Griffith);
scarce round *Cheshunt* (Boyd)
- coryli, Nic. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- scopariella, Z. *Sandridge* (Griffith)
- quercifoliella, Z. *Sandridge* (Griffith);
Hitchin (Durrant); common round
Cheshunt (Boyd)
- messaniella, Z. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- viminiella, Stt. *Sandridge* (Griffith)
- corylifoliella, Hw. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- nicellii, Z. }
- stettinensis, Nic. } *Sandridge* (Griffith)
- kleemannella, F. }
- schreberella, F. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- emberizipennella, Bch. *Sandridge* (Grif-
fith); common round *Cheshunt*
(Boyd)
- tristrigella, Hw. *Sandridge* (Griffith);
Hitchin (Durrant); common round
Cheshunt (Boyd)
- trifasciella, Hw. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- comparella, Z. Scarce round *Cheshunt*
(Boyd)
- Ornix guttea, Hw. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- betulæ, Stt. *Sandridge* (Griffith)
- scoticella, Stt. *Cheshunt Street* (Boyd)
- torquillella, Z. *Sandridge* (Griffith);
Hitchin (Durrant); common round
Cheshunt (Boyd)
- anglicella, Stt. *Sandridge* (Griffith);
common round *Cheshunt* (Boyd)
- avellanella, Stt. *Sandridge* (Griffith);
Hitchin (Durrant); common round
Cheshunt (Boyd)
- fagivora, Stt. *Sandridge* (Griffith)
- Coriscium cuculipennellum, Hb. *Sandridge*
(Griffith)
- brongniardellum, F. *Sandridge* (Grif-
fith); *Hitchin* (Durrant); common
round *Cheshunt* (Boyd)

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TINEIDÆ (continued)

- Gracilaria alchimiella*, Sc. (swederella, Th.).
St. Albans (A. E. G.); *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *stigmatella*, F. *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *semifascia*, Hw. } *Sandridge* (Griffith)
- *elongella*, L. }
- *tringipennella*, Z. *Sandridge* (Griffith); *Cheshunt Marsh* and *Theobald's* (Boyd)
- *syringella*, F. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *auroguttella*, Stph. *Sandridge* (Griffith); *Flamstead End*, *Cheshunt* (Boyd)
- Leucoptera laburnella*, Stt. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *spartifoliella*, Hb. *Sandridge* (Griffith)
- *scitella*, Z. Common round *Cheshunt* (Boyd)
- Lyonetia clerkella*, L. *Sandridge* (Griffith); common round *Cheshunt* and *Bayford* (Boyd)
- Phyllocnistis saligna*, Z. *Sandridge* (Griffith); *Hitchin* (Durrant); common at *Cheshunt Marsh* (Boyd)
- *suffusella*, Z. *Sandridge* (Griffith); *Hitchin* (Durrant); common at *Cheshunt Marsh* (Boyd)
- Bedellia somnulentella*, Z. *Churchgate*, *Cheshunt*, scarce (Boyd)
- Tischeria complanella*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *dodonæa*, Heyd. *Sandridge* (Griffith)
- *marginæa*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Ochnerostoma piniariella*, Z. *Sandridge* (Griffith)
- Cedestis farinatella*, Dup. *Hitchin* (Durrant); once at *Churchgate*, *Cheshunt* (Boyd)
- Argyresthia dilectella*, Z. *Sandridge* (Griffith)
- *andereggiella*, Dup. *Cheshunt Street*, scarce (Boyd)
- *brockeella*, Hb. *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *goedartella*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *pygmæella*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); *Cheshunt Marsh*, scarce (Boyd)
- *cornella*, F. (curvella, Stt.). *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

TINEIDÆ (continued)

- Argyresthia retinella*, Z. *Sandridge* (Griffith); *Waltham Cross* (Boyd)
- *glaucinella*, Z. *Burton Grange*, *Cheshunt* (Boyd)
- *mendica*, Hw. *Sandridge* (Griffith); *Hertford* (Stephens); *Burton Grange*, *Cheshunt* (Boyd)
- *semifusca*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *conjugella*, Z. Common round *Cheshunt* (Boyd)
- *ephippella*, F. *Sandridge* (Griffith); *Cheshunt Street*, common (Boyd)
- *nitidella*, F. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *albistria*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *semitestacella*, Curt. Common at *Broxbourne Woods* (Boyd)
- Swammerdamia combinella*, Hb. (comptella, Hb.; apicella, Don.). *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); scarce round *Cheshunt* (Boyd)
- *heroldella*, Hb. (cœsiella, Hb.). *Hitchin* (Durrant)
 var. *griseocapitella*, Stt. *Sandridge* (Griffith)
- *lutarea*, Hw. (oxyacanthella, Dup.). *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *cœsiella*, Hb. (spiniella, Hb.). *Sandridge* (Griffith)
- *pyrella*, Vill. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- Roeslerstammia exlebellæ*, F. *Hertford* (Stephens)
- Acrolepia pygmæana*, Hw. *Cheshunt* (Boyd)
- Epichnopteryx pulla*, Esp. *Hertford* (Stephens); scarce at *Cheshunt Marsh* (Boyd)
- Fumea intermediella*, Brd. (roborecolella, Brd.). *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- Taleporia pseudobombycella*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- Diplodoma marginepunctella*, Stph. Scarce round *Cheshunt* (Boyd)
- Ochsenheimeria birdella*, Curt. *Hertford* (Stephens); common round *Cheshunt* (Boyd)
- *vacculella*, F. R. *Hertford* (Stephens)
- Scythropia cratægella*, L. Scarce round *Cheshunt* (Boyd)

INSECTS

TINEIDÆ (continued)

- Incurvaria muscalella*, Fb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Cheshunt* (Boyd)
- Lampronia quadripunctella*, Stph. *Sandridge* (Griffith); *Dark Lane, Cheshunt*, scarce (Boyd)
- *prælatella*, Schiff. *Sandridge* (Griffith)
- *rubiella*, Bjerk. *Cheshunt* (Boyd)
- Tineola biselliella*, Hüm. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Phylloporia bistrigella*, Hw. *Sandridge* (Griffith)
- Monopis ferruginella*, Hb. *Waltham Cross*, common (Boyd)
- *rusticella*, Hb. *St. Albans* and *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Trichophaga tapetiella*, L. *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- Tinea capitella*, Cl. Common round *Cheshunt* (Boyd)
- *arcella*, F. *Harpenden Common* (A. E. G.); *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *parasitella*, Hb. *Sandridge* (Griffith); *College Road* and *Bury Green, Cheshunt* (Boyd)
- *cloacella*, Hb. *St. Albans, Bricket Wood* and *Asbridge* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *pellionella*, L. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *pallescentella*, Stt. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *lapella*, Hb. *St. Albans* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); common round *Cheshunt* (Boyd)
- *semifulvella*, Hw. *Berkhamsted* (Griffith); *Broxbourne Woods*, scarce (Boyd)
- Nemophora swammerdamella*, L. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)
- *schwarziella*, Z. *St. Albans* (A. E. G.); *Bricket Wood* (Barraud, A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Hertford* (Stephens); *Cheshunt* (Boyd)
- *metaxella*, Hb. *Sandridge* (Griffith); *Hertford* (Stephens)
- Adela fibulella*, Schiff. *Sandridge* (Griffith); scarce round *Cheshunt* (Boyd)
- *rufimitrella*, Sc. Common round *Cheshunt* (Boyd)
- *degeerella*, L. *Sandridge* (Griffith)

TINEIDÆ (continued)

- Adela viridella*, Sc. *Symonds Hyde and Berry Grove Wood, Aldenham* (A. E. G.); *Sandridge* (Griffith); *Bricket Wood* (Barraud); common round *Cheshunt* (Boyd)
- Nemotois minimellus*, Z. *Bricket Wood, St. Albans* and *Hoddesdon* (A. E. G.); *Sandridge* (Griffith)

MICROPTERYGINA

HEPIALIDÆ

- Hepialus hectus*, L. *St. Albans* and *Bricket Wood* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Watford* (Spencer, Wigg); *Tring*, taken in the *Shire Lane* near its junction with the *Longcroft Road*, and also at *Payne's End*, by Mr. J. L. Foulkes (Elliman); *Stevenage* (Matthews); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)
- *lupulinus*, L. Abundant in all the districts
- *vellida*, Hb. *Hedges Farm, St. Albans*, and *Berkhamsted* (A. E. G.); *Hitchin* (Durrant); *Watford* (Spencer)
- *sylvinus*, L. *Hedges Farm, St. Albans*, and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer); *Hertford* (Stephens); *East Barnet* (Gillum); *Watford* (Spencer, Heaton); *Tring* and *Wilstone reservoir*, in great numbers in 1891 (Elliman); *Bishop Stortford* (Taylor); *Cheshunt* (Boyd)
- *humuli*, L. *St. Albans* and *Harpenden* (A. E. G.); *Sandridge* (Griffith); *Hitchin* (Durrant); *Haileybury* (Bowyer, Stockley); *Bushey* (Cutts); *East Barnet* (Gillum); *Watford* (Heaton, Wigg); *Tring, Parsonage Bottom* and *Dancer's End* (Elliman); *Grove Park, Tring* (Le Quesne); *Bushey Heath* (Barraud); *Stevenage* (Matthews); *Bishop Stortford* (Taylor, Mellows); *Cheshunt* (Boyd); *Oxbey* (H. Rowland-Brown)

Mr. Stockley reports that *H. humuli* has deserted some of its old haunts and is not so common as it was formerly

MICROPTERYGIDÆ

- Micropteryx sparmannella*, Bosc. *Sandridge* (Griffith)
- *purpurella*, Hw. } *Sandridge*
- *semipurpurella*, Stph. } (Griffith)
- *sangii*, Wood. }
- *subpurpurella*, Hw. *Sandridge* (Griffith); common round *Cheshunt* (Boyd)

A HISTORY OF HERTFORDSHIRE

MICROPTERYGIDÆ (continued)

- Eriocephala thunbergella*, F. Sandridge (Griffith); common in *Broxbourne* and *Wormley Woods* (Boyd)
 — *aureatella*, Sc. (allionella, F.). Hertford (Stephens)
 — *mansuetella*, Z. Sandridge (Griffith);

MICROPTERYGIDÆ (continued)

- scarce at *Bury Green, Cheshunt* (Boyd)
Eriocephala aruncella, Sc. (seppella, F.). Sandridge (Griffith); common round *Cheshunt* (Boyd)
 — *calthella*, L. Sandridge (Griffith)

NOTE

As the *Coleoptera* and *Lepidoptera* are the only orders which have been systematically listed for the county the few notes available regarding the other orders are here grouped together.

Orthoptera.—The Common Earwig (*Forficula auricularia*) is of course abundant everywhere, and it commits great ravages among fruit and flowers. Other species of the same genus are no doubt present, but I have been unable to find any published records of their occurrence or to learn that they have been recognized. The Domestic Cricket (*Gryllus domesticus*) and the Common Cockroach (*Blatta orientalis*) are widely distributed, and the Grasshopper is often seen and heard. Mr. J. F. Stephens in *Illustrations of British Entomology* ('Mandibulata'), vi., records the following five species as occurring in the vicinity of the county town. I have followed his nomenclature in all cases: *Micropteryx aptera*, in a wood near Hertford; *Meconema varia*; *Phasgonura viridissima*; *Acrydium subulatum*; and *A. nigricans*.

Neuroptera.—A paper entitled 'Notes on the Mayfly' was read before the members of the Watford Natural History Society on June 13th, 1878, by Dr. Peter Hood. This was printed in the *Transactions*¹ and illustrated by a coloured plate. The subject is there treated largely from the point of view of a fly-fisher, and the only reference which is made to Hertfordshire is a record of the disappearance of *Ephemera vulgata* from the river Colne at Rickmansworth. This stream formerly abounded with Mayflies as well as trout, but owing to the pollution of the water both fly and fish had ceased to frequent the Colne at the time Dr. Hood's paper was written. Lacewing Flies (*Chrysopa*), insects with delicate green bodies, are often met with on warm summer evenings. They come freely to light, and when captured emit a very unpleasant odour. The common species of Dragonflies are frequently to be met with.

Mr. Stephens reports the presence of the following species of *Neuroptera* :—

Ephemera vulgata
 — *fusca*
 — *rosea*
 — *helvipes*
Cænis pennata
Bætis longicauda
 — *costalis*
 — *subfusca*
 — *obscura*
 — *bioculata*
 — *culiciformis*
 — *horaria* (?)
 — *cingulata*
Cloëon ochraceum
 — *albipenne* (?)
 — *unicolore*
 — *dimidiatum*
Anax formosa
Æschna grandis
 — *affinis*
 — *vernalis*
Chrysopa capitata
 — *reticulata*

Chrysopa ventralis
Hemerobius pini
 — *pallidus*
 — *fuscatus*
Coniopteryx tineiformis
Psocus subnebulosus
 — *venosus*
 — *vittatus*
 — *flavicans*
 — *subocellatus*
 — *rufescens*
 — *flavescens*
 — *nigricornis*
 — *phæopterus*
Sialis lutarius
Nemoura annulata
 — *luteicornis*
 — *pallicornis*
 — *nitida*
 — *sulcicollis*
 — *variegata*
Leuctra fusciventris
 — *abdominalis*

¹ *Trans. Watford Nat. Hist. Soc.*, vol. ii. p. 107.

INSECTS

Trichoptera.—Mr. Stephens enumerates the following species :—

| | |
|----------------------------|-----------------------|
| Hydroptila tineoides | Mormonia hirta |
| — sparsa | — immaculata |
| Agapetus laniger | Leptocerus dissimilis |
| — setiferus | — seminiger |
| Beræa albipes | Molanna nigripalpis |
| Anticyra gracilipes | Phryganea grandis |
| — ciliaris | Halesus digitatus |
| Tinodes luridus | — latipennis |
| Rhyacophila nebulosa | Limnephilus geminus |
| Cyrnus unipunctatus | — punctatissimus |
| — unicolor | — fuscatus |
| Polycentropus subpunctatus | — sparsus |
| — trimaculatus | — substrigosus |
| Notodobia atrata | Anabolia nervosa |
| Silo pallipes | — testacea |
| Goëra pilosa | Chætopteryx villosa |
| — flavipes | — brevipennis |

Hymenoptera.—In some parts of Hertfordshire the Honey Bee is a source of considerable revenue to the cottager. Besides the ordinary Black Bee (*Apis mellifica*) several foreign species have been introduced, the best known being *A. ligustica*, a rather larger insect with yellow bands, and this hybridizes freely with *A. mellifica*, producing a strain which though good honey-gatherers are of more uncertain temper and less easily managed. For this reason many beekeepers on detecting the results of a cross of this kind immediately remove the queen bee in order that the old black strain may be reverted to. The social wasps are represented both by the Tree or Wood Wasp (*Vespa sylvestris*), whose pendent nests are often found of a considerable size, and by those species which construct their nests in the ground. There is in the Hertfordshire County Museum at St. Albans a large nest of *V. sylvestris* which was taken from a conifer in the grounds of North End House, Watford, and presented to the museum by Mr. Percy Manning. In some seasons wasps of several species are present in great numbers and do a very considerable amount of injury. The wasp infestation of 1893 will be long remembered by fruit-growers on account of the loss they then sustained. Not only were the outdoor crops attacked, but vineries and orchard houses were invaded to a serious extent. This visitation of wasps was dealt with at some length in a paper read before the members of the Hertfordshire Natural History Society.¹ Some interesting facts relating to the hybernation of queen wasps then came under notice. Mr. Richard Shillitoe of Bancroft, Hitchin, reported that in a heap of stones near Ickleford Gatehouse large numbers of queen wasps were found by the roadmen, and at St. Ibbs near Hitchin a quantity estimated at about 200 were discovered in an old piece of sailcloth on the roof of a shed.

The commoner species of ants are present, and Sawflies are a source of trouble in fields and gardens, especially notable in this respect being the ravages committed by the Turnip Sawfly (*Athalia spinarum*), the Currant Sawfly (*Nematus ribesii*) and the Slug Worm (*Eriocampa limacina*). The Great Wood Wasp or Giant Sirex (*Sirex gigas*) occasionally finds its way into houses and causes alarm, being mistaken for a hornet.

The following are the species of *Hymenoptera* observed by Mr. Stephens near Hertford :—

| | |
|--|---------------------|
| Cladius morio | Selandria adumbrata |
| — immunis | — geniculata |
| Pristiphora duplex | — atra |
| — varipes | — ovata |
| Nematus bicolor | Sciapteryx costalis |
| — dimidiatus | Dosytheus anticus |
| — miliaris | — hyalinalis |
| — pavidus | — xanthopus |
| — ruficornis | Dolerus fumosus |
| Cœsus septentrionalis (also found at Barnet) | — palmatus |
| Athalia suessionensis | Emphytus cingulatus |
| Selandria hyalina | — perla |
| — testudinea | Lyda hortorum |

¹ *Trans. Herts Nat. Hist. Soc.*, vol. viii. p. 22.

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Cephus troglodyta

- pallipes
- pygmæus
- tabidus
- Janus connectens
- Xyela pusilla
- Ichneumon rufipes
- pumilus
- crassicornis ('I believe at Hertford')
- fulvipes
- candidatus
- iridipennis
- submarginatus
- primatorius
- flavolineatus
- ornatorius
- laboratorius
- occisorius
- equitatorius
- castanopyga ♀
- troglodytes
- ruficoxatus
- mutabilis

Ichneumon mitigosus

- ruficollis
- Ischnus porrectorius
- Stilpnus blandus
- Mesoleptus submarginatus
- melanocephalus
- sticticus
- spheginus
- gracilis
- Tryphon prærogator
- nanus
- anceps
- mesoleptoides
- erythropalpus
- parvulus
- quadrilineatus
- Exochus mansuetor
- Cryptus cyanator
- assertorius
- brevicornis
- Phygadeuon exiguus
- Megastigmus dorsalis

Diptera.—Mr. Verrall in his *List of British Diptera* divides the order into two great sections, the *Orthorrhapha* and the *Cyclorrhapha*. The old sub-order *Aphaniptera* has been done away with, and the *Pulicidæ* or 'fleas' have been included among the *Nematocera*, one of the sub-sections of the *Orthorrhapha*. The Hon. N. Charles Rothschild, who has made the family a special study, enumerates twenty-five species of *Pulicidæ* belonging to six genera which have been found within a radius of five miles of Tring, and doubtless two others—*Ceratophyllus columbæ* from the domestic pigeon and *C. styx* from the sand martin—which have not yet been detected are also present. *Typhlopsylla pentacanthus* was first taken by Mr. Albert Piffard of Feldon, Boxmoor, and was described by Mr. Rothschild. The capture of *T. dasycnemus* near Tring gives, so far as is known, the only British record for this species, and *Ceratophyllus mustelæ* and *C. penicilliger* are here recorded for the first time. The following is the Hon. N. Charles Rothschild's list of Tring *Pulicidæ* :—

Pulex irritans

- canis
- felis
- gonioccephalus
- erinacei
- Typhlopsylla gracilis
- pentacanthus
- agyrtes
- „ sub-sp. nobilis (from water vole)
- bisocstemdentatus, Wagner
- dasycnemus (from common shrew)
- Ctenopsylla musculi
- spectabilis (one specimen)

Hystriophylla talpæ

- Ceratophyllus sciurorum
- gallinæ
- hirundinis (from house martin)
- fasciatus
- mustelæ
- penicilliger
- Ceratopsylla elongatus (from noctule bat)
- jubatus
- octactenus (from Natterer's bat)
- pentactenus
- hexactenus (from long-eared bat)

The Hessian Fly (*Cecidomyia destructor*) has a special county interest, as this pest was first recognized in Britain at Revell's Hall, Hertford, in July, 1886. The barley crops at that place were found to be badly 'root-fallen' and much injured. On examination the presence of pupæ resembling linseed was detected in the joints of the stem, and on specimens being submitted to Miss E. A. Ormerod she identified the pupæ as those of the Hessian Fly, a minute insect which commits serious ravages in America and on the continent of Europe. Infestations were subsequently reported from other farms in the same neighbourhood, from Ware and Hitchin in this county, and from numerous other localities in the British Isles. An investigation of the parasites which were reared from some of the Hertfordshire specimens enabled Miss Ormerod to draw the conclusion that the pest had been imported from the east of Europe.¹ A carefully prepared paper on the subject was written by Mr. F. Maule Campbell, F.L.S., F.Z.S., the then President of the Hertfordshire Natural History Society.² *Diplosis*

¹ *Manual of Injurious Insects*, E. A. Ormerod, p. 89.

² *Trans. Herts Nat. Hist. Soc.*, vol. iv. p. 180.

SPIDERS

tritici, the Red Maggot or Wheat Midge, often proves a great enemy to the farmer. The eggs of this troublesome species are deposited inside the florets of wheat, and the resulting grub does so much damage to the young grains that they do not come to maturity. In 1881 the Wheat Midge was seen swarming in chaff near Knebworth, and its larvæ did a considerable amount of mischief.¹ Another insect very destructive to crops is the Common Daddy Long-legs or Crane Fly (*Tipula oleracea*), which often makes its unwelcome presence known to the Hertfordshire farmer. In 1880 great injury was done at Baldock, where forty acres of wheat were damaged to the extent of quite £100 by the 'Leather Jackets,' as its grubs are commonly called. With the exception of Mr. Rothschild's catalogue of the Pulicidæ printed above no list of Hertfordshire *Diptera* appears to be in existence.

Hemiptera and *Aphides*.—Although the common species belonging to both the sub-orders *Heteroptera* and *Homoptera* are to be found in the county of Hertford I cannot learn that any naturalist has devoted attention to them. The same remark must be applied to the *Aphides*.

ARACHNIDA

Spiders, etc.

Greater researches have been made in connection with members of this order in the county of Hertford than perhaps in any other county of England with the exception of Dorset.

These have been almost entirely due to the efforts of F. Maule-Campbell, Esq., F.L.S., F.Z.S., F.R.H.S., whose valuable paper on the 'Spiders of the Neighbourhood of Hoddesdon' was published in 1883 in the *Transactions of the Hertfordshire Natural History Society*.

Of the physical character and geological formation of the county with reference to the arachnid fauna one cannot do better than quote Mr. Campbell's remarks: 'There is in the immediate neighbourhood of Hoddesdon no extent of chalk limestone nor real heath soil, all of which would be desirable from a collector's point of view. We have but gravel and clay-loam. Nor are there any special limits which would make the fauna particularly interesting. The Lea marshes, and the valleys and woods on this side of that river, have no exceptional characteristic, and there can be but little doubt but that all the spiders which are named could be found throughout the Lea district.'

Nor can this list be considered a full one, for while 550 and upwards of species are recorded from England and Wales, 203 species are all that have been placed to the credit of Hertfordshire, besides 2 false-scorpions and 1 harvestman.

Of these the following merit a special notice: *Dysdera crocata*, *Oonops pulcher*, *Clubiona cærulescens*, *Chiracanthium lapidicolens*, *Altella spinigera*, *Centromerus expertus*, *Hilaira uncata*, *Linyphia impigra*, *Araneus alsine*, *Meta menardi*, *Leptorhoptrum buthwaitii*, *Plæsiocrærus permixtus*, *Entelecara trifrons*, *Viderius anticus*, *V. cucullatus* and *Panamomops bicuspis*.

By far the greater part of the species recorded are from the neighbourhood of Hoddesdon. In cases where the generic or specific name quoted is not that under which the spider has usually been recognized in the works of English authors a note has been added calling attention to the fact.

¹ *Trans. Herts Nat. Hist. Soc.*, vol. ii. p. 82.

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ARANEÆ

ARACHNOMORPHÆ

DYSDERIDÆ

Spiders with six eyes and two pairs of stigmatic openings, situated close together on the genital rima ; the anterior pair communicating with lung books, the posterior with tracheal tubes. Tarsal claws, two in *Dysdera*, three in *Harpactes* and *Segestria*.

1. *Dysdera cambridgii*, Thorell.

Hoddesdon (F. M. C.).

Not uncommon under stones and bark of trees, where it lurks within a tubular retreat. The spider is easily recognizable by its elongate form, orange legs, dark mahogany carapace and pale clay-yellow abdomen. The palpal bulb of the male has no cross-piece at the apex. The spider is also known as *D. erythryna*, Blackwall.

2. *Dysdera crocata*, C. L. Koch.

Hoddesdon (F. M. C.).

Larger than the last species, with a deep orange-pink carapace, orange legs, and abdomen with a delicate rosy-pink flush. The palpal bulb of the male has a cross-piece at the apex. This spider is also known as *D. rubicunda*, Blackwall.

3. *Harpactes hombergii* (Scopoli).

Hoddesdon (F. M. C.).

Rare under bark of trees, and recognizable by its linear ant-like form, black carapace, and pale clay-yellow abdomen and three tarsal claws.

4. *Segestria senoculata* (Linnæus).

Hoddesdon (F. M. C.).

Not common ; under bark of trees, in the crevices of loose stone walls and amongst detached rocks. Recognizable by its linear form and the black diamond-shaped blotches on the dorsal surface of the abdomen.

5. *Oonops pulcher*, Templeton.

Hoddesdon (F. M. C.).

Rare ; a very small linear brick-red spider.

DRASSIDÆ

Spiders with eight eyes, situated in two transverse rows. The tracheal openings lie just in front of the spinners. The tarsal claws are two in number, the anterior pair of spinners are set wide apart at the base, and the maxillæ are more or less impressed across the middle.

6. *Drassodes lapidosus* (Walckenaer).

Hoddesdon (F. M. C.).

Very common under stones. Also known as *Drassus lapidicolens*.

7. *Scotophæus blackwallii* (Thorell).

Hoddesdon (F. M. C.).

A dark elongate mouse-grey spider, often found wandering about the walls of dwelling and outhouses at night. Known also as *Drassus sericeus*, Blackwall.

CLUBIONIDÆ

Spiders with eight eyes, situated in two transverse rows. The tracheal openings lie immediately in front of the spinners. The tarsal claws are two in number, but the anterior pair of spinners are set close together at the base ; the maxillæ are convex and not impressed across the middle.

8. *Micaria pulicaria* (Sundevall).

Hoddesdon (F. M. C.).

A small dark spider, iridescent and shining, with a white cincture round the middle of the anterior half of the abdomen. Known also as *Drassus nitens*, Blackwall.

9. *Phrurolithus festivus*, C. L. Koch.

Hoddesdon (F. M. C.).

Also known as *Drassus propinquus*, Blackwall.

10. *Zora spinimana* (Sundevall).

Hoddesdon (F. M. C.).

11. *Clubiona stagnatilis*, Kulczynski.

Lea Valley (F. M. C.).

Known also as *C. holosericea*, Blackwall.

12. *Clubiona terrestris*, Westring.

Hoddesdon (F. M. C.).

13. *Clubiona reclusa*, O. P.-Cambridge.

Hoddesdon (F. M. C.).

14. *Clubiona lutescens*, Westring.

Hoddesdon (F. M. C.).

15. *Clubiona pallidula* (Clerck).

Hoddesdon (F. M. C.).

SPIDERS

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| <p>16. <i>Clubiona corticalis</i> (Walckenaer). Hoddesdon (F. M. C.).</p> <p>17. <i>Clubiona phragmitis</i>, C. L. Koch. Hoddesdon (F. M. C.).</p> <p>18. <i>Clubiona cærulescens</i>, L. Koch. Box Wood (F. M. C.). The third example only of the adult male recorded in Britain.</p> <p>19. <i>Clubiona compta</i>, C. L. Koch. Hoddesdon (F. M. C.).</p> | <p>20. <i>Chiracanthium erraticum</i> (Walckenaer). The Roman road, Hoddesdon (F. M. C.). Known also under the name of <i>C. carnifex</i>.</p> <p>21. <i>Chiracanthium lapidicolens</i>, Simon. Hoddesdon (F. M. C.). Rare; an immature specimen only recorded. Known also as <i>C. nutrix</i>.</p> |
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ANYPHÆNIDÆ

The spiders of this family resemble those of the *Clubionidæ* in most respects, except that the tracheal stigmatic openings beneath the abdomen are situated about midway between the genital rima and the spinners, and not, as in the last family, immediately in front of the spinners. One species only is indigenous to Great Britain and is very common amongst the foliage of trees in May and June.

22. *Anyphæna accentuata* (Walckenaer).
Hoddesdon (F. M. C.).

THOMISIDÆ

Spiders with eight eyes, situated in two transverse rows, two tarsal claws and anterior spinners close together at their base. Maxillæ not impressed. The crab-like shape and side-long movements of these spiders are their chief characteristics, enabling them to be easily distinguished from the more elongate *Drassidæ* and *Clubionidæ*.

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| <p>23. <i>Philodromus dispar</i>, Walckenaer. Hoddesdon (F. M. C.).</p> <p>24. <i>Philodromus aureolus</i> (Clerck). Hoddesdon (F. M. C.).</p> <p>25. <i>Philodromus cæspiticolens</i>, Walckenaer. Hoddesdon (F. M. C.).</p> <p>26. <i>Tibellus oblongus</i> (Walckenaer). Hoddesdon (F. M. C.).</p> <p>27. <i>Xysticus cristatus</i> (Clerck). Hoddesdon and other parts of Hertfordshire (F. M. C.).</p> | <p>28. <i>Xysticus ulmi</i> (Hahn). Hoddesdon (F. M. C.).</p> <p>29. <i>Xysticus luctuosus</i> (Blackwall). Hoddesdon (F. M. C.). A much rarer species than the two first named.</p> <p>30. <i>Oxyptila praticola</i> (C. L. Koch). Hoddesdon (F. M. C.).</p> <p>31. <i>Oxyptila trux</i> (Blackwall). Hoddesdon (F. M. C.).</p> <p>32. <i>Misumena vatia</i> (Clerck). Hoddesdon (F. M. C.).</p> |
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ATTIDÆ

The spiders of this family may be recognized in a general way by their mode of progression, consisting of a series of leaps. More particularly they may be known by the square shape of the cephalic region and the fact that the eyes are arranged in three rows of 4, 2, 2, the centrals of the anterior row being much the largest. Otherwise the spiders are simply specialized *Clubionids* with two tarsal claws and other minor characters possessed in common with other members of this family.

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| <p>33. <i>Salticus scenicus</i> (Clerck). Hoddesdon (F. M. C.).</p> <p>34. <i>Salticus cingulatus</i> (Panzer). Hoddesdon (F. M. C.). This species is not nearly so common as the last.</p> <p>35. <i>Euophrys frontalis</i> (Walckenaer). Hoddesdon (F. M. C.).</p> | <p>36. <i>Neon reticulatus</i> (Blackwall). Hoddesdon (F. M. C.).</p> <p>37. <i>Attus pubescens</i> (Fabricius). Hoddesdon (F. M. C.). Known also as <i>Salticus sparsus</i>, Blackwall.</p> <p>38. <i>Ergane falcata</i> (Clerck). Hoddesdon (F. M. C.). Known also as <i>Salticus coronatus</i>, Blackwall.</p> |
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39. *Heliophanus flavipes*, C. L. Koch.

Hoddesdon (F. M. C.).

Rare ; found on the Roman road.

40. *Marptusa muscosa* (Clerck).

Hoddesdon (F. M. C.).

Common. Known also as *Salticus tardigradus*, Blackwall.

41. *Ballus depressus* (Walckenaer).

Hoddesdon (F. M. C.).

Known also as *Salticus obscurus*, Blackwall.

PISAURIDÆ

Spiders with eight eyes in three rows of 4, 2, 2 ; the small anterior eyes being sometimes in a straight line, sometimes recurved and sometimes procurved. Those of the other two rows are situated in the form of a rectangle of various proportions and are much larger than the eyes of the anterior row. The tarsal claws are three in number. *Pisaura* runs freely over the herbage, carrying its egg-sac beneath the sternum ; while *Dolomedes* is a dweller in marshes and swamps.

42. *Pisaura mirabilis* (Clerck).

Hoddesdon (F. M. C.).

Known also as *Dolomedes*, or *Ocyale*, *mirabilis*.

LYCOSIDÆ

The members of this family are to be found running freely over the ground, and carrying the egg-sac attached to the spinners. Many of the larger species make a short burrow in the soil and there keep guard over the egg-sac. Eyes and tarsal claws as in the *Pisauridæ*, with slight differences.

43. *Lycosa ruficollis* (De Geer).

Hoddesdon (F. M. C.).

Known also as *L. campestris*, Blackwall.

44. *Lycosa terricola*, Thorell.

Hoddesdon (F. M. C.).

Known also as *L. agretica*, Blackwall.

45. *Lycosa pulverulenta* (Clerck).

Hoddesdon (F. M. C.).

Known also as *L. rapax*, Blackwall, and *Tarentula pulverulenta*.

46. *Pardosa lugubris* (Walckenaer).

Hoddesdon (F. M. C.).

47. *Pardosa pullata* (Clerck).

Hoddesdon (F. M. C.).

Known also as *Lycosa obscura*, Blackwall.

48. *Pardosa pratensis* (C. L. Koch).

Hoddesdon (F. M. C.).

This species is given in Mr. Campbell's list as *Lycosa riparia*, C. L. Koch.

49. *Pardosa nigriceps*, Thorell.

Hoddesdon (F. M. C.).

50. *Pardosa palustris* (Linnæus).

Hoddesdon (F. M. C.).

Known also as *Lycosa exigua*, Blackwall.

51. *Pardosa amentata* (Clerck).

Hoddesdon (F. M. C.).

52. *Pirata hygrophilus*, Thorell.

Hoddesdon (F. M. C.).

53. *Pirata piraticus* (Clerck).

Hoddesdon (F. M. C.).

AGELENIDÆ

Spiders with eight eyes, situated in two straight or more or less curved transverse rows. Tarsal claws, three. The species of this family spin a large sheet-like web, and construct a tubular retreat at the back of it, which leads to some crevice amongst the rocks or in the herbage, or in the chinks in the walls of outhouses and barns, wherever the various species may happen to be found. The habits of *Argyroneta*, the water spider, are however quite different. The posterior pair of spinners is much longer than the others in the more typical genera of this family.

54. *Tegenaria atrica*, C. L. Koch.

Hoddesdon (F. M. C.).

Only a single specimen is recorded by Mr. Campbell.

55. *Tegenaria parietina* (Fourcroy).

Hoddesdon (F. M. C.).

Abundant in this county and the London district generally. Known also as *T. guyonii* and *T. domestica*.

56. *Tegenaria derhami* (Scopoli).

Hoddesdon (F. M. C.).

A very common species everywhere.

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57. *Agelena labyrinthica* (Clerck).

Hoddesdon (F. M. C.).

Abundant, forming large sheet-like webs on the herbage, with a funnel-shaped tubular retreat.

58. *Hahn timer elegans* (Blackwall).

Lea Valley (F. M. C.).

Not uncommon amongst the roots of aquatic plants and riverside herbage. Known also as *Agelena elegans*, Blackwall.

59. *Hahn timer montana* (Blackwall).

Hoddesdon (F. M. C.).

Not uncommon. Known also as *Agelena montana*, Blackwall.

60. *Hahn timer helveola*, Simon.

Box Wood (F. M. C.).

A single female only has been taken, though it is not uncommon in other southern counties.

ARGIOPIDÆ

The spiders included in this family have eight eyes, situated in two rows, the lateral eyes of both rows being usually adjacent, if not in actual contact, while the central eyes form a quadrangle. The tarsal claws are three, often with other supernumerary claws. The web is either an orbicular snare, as in the case of the 'common garden spider,' or consists of a sheet of webbing, beneath which the spider hangs and captures its prey as it falls upon the sheet. This immense family includes those usually separated under the names *Epeiridæ* and *Linyphiidæ*.

61. *Nesticus cellulanus* (Clerck).

Hoddesdon (F. M. C.).

A single specimen only. Known also as *Linyphia crypticolens*, Blackwall.

62. *Meta segmentata* (Clerck).

Hoddesdon (F. M. C.).

Very abundant. Known also as *Epeira inclinata*, Blackwall.

63. *Meta merianæ* (Scopoli).

Hoddesdon (F. M. C.).

Not uncommon. Known also as *Epeira antriada*, Blackwall, and a striking variety as *E. celata*, Blackwall.

64. *Meta menardi* (Latreille).

Hoddesdon (F. M. C.).

Rare; usually found in caves, cellars and dark cavernous situations. Known also as *Epeira fusca*, Blackwall.

65. *Tetragnatha extensa* (Linnæus).

Hoddesdon (F. M. C.).

Most abundant and generally distributed.

66. *Tetragnatha solandri* (Scopoli).

Lea Valley (F. P. S.).

67. *Pachygnatha clerckii*, Sundevall.

Hoddesdon (F. M. C.).

Generally distributed throughout the county.

68. *Pachygnatha degeerii*, Sundevall.

Hoddesdon (F. M. C.).

Common and generally distributed.

69. *Pachygnatha listeri*, Sundevall.

Hoddesdon (F. M. C.).

Much rarer than the other two species above.

70. *Cyclosa conica* (Pallas).

Lea Valley (F. M. C. and F. P. S.).

A few specimens only have been taken. Known also as *Epeira conica*, Blackwall.

71. *Zilla* × - *notata* (Clerck).

Hoddesdon (F. M. C.).

Very common. Known also as *Epeira similis*, Blackwall.

72. *Zilla atrica*, C. L. Koch.

Hoddesdon (F. M. C.).

Almost as common as the above. Known also as *Epeira callophylla*, Blackwall.

73. *Araneus cucurbitinus*, Clerck.

Hoddesdon (F. M. C.).

Common and generally distributed.

74. *Araneus diadematus*, Clerck.

Hoddesdon (F. M. C.).

Abundant and generally distributed.

75. *Araneus cornutus*, Clerck.

Lea Valley (F. M. C.).

Common. Known also as *Epeira apoclisia*, Blackwall.

76. *Araneus sclopetarius*, Clerck.

Lea Valley (F. M. C.).

Common. Known also as *Epeira sericata*, Blackwall.

77. *Araneus marmoreus*, Clerck.

Hoddesdon (F. M. C.).

Rare. Known also as *Epeira pyramidata*, C. L. Koch, and *E. scalaris*, Walckenaer.

78. *Araneus umbraticus*, Clerck.

Hoddesdon (F. M. C.).

Common and generally distributed.

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79. *Araneus alsine*, Walckenaer.
Hoddesdon (F. M. C.).
Rare. Known also as *Epeira lutea*, Blackwall.
80. *Araneus gibbosus*, Walckenaer.
High Leigh (F. M. C.).
A single immature male only. Known also as *Epeira arbustorum*, C. L. Koch, and *E. bicornis*, Blackwall.
81. *Araneus triguttatus*, Fabricius.
Hoddesdon (F. M. C.).
Not common. Known also as *Epeira agalena*, Blackwall.
82. *Linyphia impigra*, O. P.-Cambridge.
Lea Valley (F. M. C.).
Abundant in some spots in this valley.
83. *Linyphia triangularis* (Clerck).
Hoddesdon (F. M. C.).
Common. Known also as *L. montana*, Blackwall.
84. *Linyphia hortensis*, Sundevall.
Hoddesdon (F. M. C.).
Not common. Known also as *L. pratensis*, Blackwall.
85. *Linyphia pusilla*, Sundevall.
Hoddesdon (F. M. C.).
Not common. Known also as *L. fuliginea*, Blackwall.
86. *Linyphia montana* (Clerck).
Hoddesdon (F. M. C.).
Common. Known also as *L. marginata*, Blackwall.
87. *Linyphia clathrata*, Sundevall.
Hoddesdon (F. M. C.).
Abundant. Known also as *Nerience marginata*, Blackwall.
88. *Linyphia insignis*, Blackwall.
Hoddesdon (F. M. C.).
89. *Labulla thoracica* (Wider).
Hoddesdon (F. M. C.).
Common. Known also as *Linyphia cauta*, Blackwall.
90. *Floronia bucculenta* (Clerck).
Hoddesdon (F. M. C. and F. P. S.).
Rare. Known also as *Linyphia frenata* (Wider).
91. *Stemonyphantes lineatus* (Linnæus).
Hoddesdon (F. M. C.).
Not common. Known also as *Linyphia bucculenta*, O. P.-C., and *Nerience trilineata*, Blackwall.
92. *Drapetisca socialis* (Sundevall).
Hoddesdon (F. M. C.).
Known also as *Linyphia socialis*. Not common.
93. *Lepthyphantes leprosus* (Ohlert).
Hoddesdon (F. M. C.).
Common.
94. *Lepthyphantes blackwallii*, Kulczynski.
Hoddesdon (F. M. C.).
Common.
95. *Lepthyphantes minutus* (Blackwall).
Hoddesdon (F. M. C.).
Rare.
96. *Lepthyphantes tenuis* (Blackwall).
Hoddesdon (F. M. C.).
Common.
97. *Lepthyphantes obscurus* (Blackwall).
The Roman road (F. M. C.).
Rare.
98. *Lepthyphantes nebulosus* (Sundevall).
Hoddesdon (F. M. C.).
Rare and very local. Known also as *Linyphia vivax*, Blackwall.
99. *Lepthyphantes ericeus* (Blackwall).
Hoddesdon (F. M. C.).
Not common.
100. *Lepthyphantes pallidus* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Rare.
101. *Bathypantes pullatus* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Common.
102. *Bathypantes nigrinus* (Westring).
Hoddesdon (F. M. C.).
Common. Known also as *Linyphia pulla*, Blackwall.
103. *Bathypantes meadii* (O. P.-Cambridge).
Lea Valley (F. M. C.).
Abundant. Known also as *Linyphia approximata* (O. P.-Cambridge).
104. *Bathypantes dorsalis* (Wider).
Hoddesdon (F. M. C.).
Not uncommon. Known also as *Linyphia claytoniæ*, Blackwall.
105. *Bathypantes circumspectus* (Blackwall).
Hoddesdon (F. M. C.).
Common everywhere.
106. *Bathypantes parvulus* (Westring).
Hoddesdon (F. M. C.).
Rare.

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107. *Bathypantes concolor* (Wider).
Hoddesdon (F. M. C.).
Not uncommon ; very local. Known also as *Theridion filipes*, Blackwall.
108. *Pæciloneta variegata* (Blackwall).
Hoddesdon (F. M. C.).
Rare. Known also under *Linyphia*.
109. *Porrhomma errans* (Blackwall).
Hoddesdon (F. M. C.).
110. *Porrhomma microphthalmum* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Known also as *Linyphia decens* and *L. incerta*, O. P.-Cambridge.
111. *Porrhomma oblongum* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
112. *Porrhomma pygmaeum* (Blackwall).
High Leigh (F. M. C.).
A single specimen only of this rare spider recorded.
113. *Hilaira uncata* (O. P.-Cambridge).
Lea Valley (F. M. C.).
A few taken in marshy places.
114. *Tmeticus neglectus* (O. P.-Cambridge).
Box Wood (F. M. C.).
Four specimens only have been taken of this rare species.
115. *Tmeticus graminicolus* (Sundevall).
Hoddesdon (F. M. C.).
116. *Leptorhoptrum buthwaitii* (O. P.-Cambridge).
Lea Valley (F. M. C.).
Two specimens of each sex only have been taken in ditches.
117. *Centromerus expertus* (O. P.-Cambridge).
Lea Valley (F. M. C.).
Found in some abundance in marshy places in October.
118. *Centromerus sylvaticus* (Blackwall).
Lea marshes (F. M. C.).
Both sexes were taken in October.
119. *Centromerus bicolor* (Blackwall).
Hoddesdon (F. M. C.).
120. *Macrargus abnormis* (Blackwall).
Hoddesdon (F. M. C.).
A single specimen only.
121. *Microneta subtilis* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Very common on iron railings in July. Known also as *Neriere anomala*, O. P.-Cambridge.
122. *Microneta viaria* (Blackwall).
Hoddesdon, The Pollards (F. M. C.).
Two specimens only have been taken.
123. *Micryphantes innotabilis* (O. P.-Cambridge).
Broxbourne Common ; Easneye ; Ware (F. M. C.).
124. *Micryphantes fuscipalpis*, C. L. Koch.
Hoddesdon (F. M. C.).
A doubtful species.
125. *Micryphantes rurestris*, C. L. Koch.
Hoddesdon (F. M. C.).
Known also as *Neriere fuscipalpis*, O. P.-Cambridge, ad partem ; and probably *N. gracilis* and *flavipes*, Blackwall.
126. *Micryphantes decora* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Two specimens only on the Roman road.
127. *Micryphantes saxatilis* (Blackwall).
Box Wood (F. M. C.).
Known also as *Neriere saxatilis*, *N. rustica* and *N. campbellii*, O. P.-Cambridge.
128. *Micryphantes mollis* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
A single male only. Known also under *Neriere*.
129. *Sintula aerea* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Known also as *Linyphia aerea*, O. P.-Cambridge.
130. *Sintula diluta* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Rare.
131. *Erigone atra* (Blackwall).
Hoddesdon (F. M. C.).
Very abundant on railings.
132. *Erigone dentipalpis* (Wider).
Hoddesdon (F. M. C.).
Equally abundant as the last species and in the same situations.
133. *Tiso vagans* (Blackwall).
Hoddesdon (F. M. C.).
Rare ; two specimens only have been recorded.
134. *Gongylidium rufipes* (Sundevall).
Hoddesdon (F. M. C.).
Known also as *Neriere munda*, Blackwall, and *N. rufipes*, O. P.-Cambridge.
135. *Neriere rubens*, Blackwall.
Hoddesdon (F. M. C.).
Known also as *Gonatium rubens*.

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136. *Neriere isabellina* (C. L. Koch).
Hoddesdon (F. M. C.).
Known also as *Neriere rubella*, Blackwall.
137. *Dicyphus cornutus* (Blackwall).
Hoddesdon and Lea Valley (F. M. C.).
138. *Hypomma bituberculatum* (Wider).
Lea Valley (F. M. C.).
Known also under the name *Neriere*.
139. *Trachygnatha dentata* (Wider).
Lea Valley (F. M. C.).
Known also under the name *Neriere*.
140. *Ædothorax gibbosus* (Blackwall).
Lea Valley (F. M. C.).
Known also under the name *Neriere*.
141. *Ædothorax tuberosus* (Blackwall).
Lea Valley (F. M. C.).
Known also under the name *Neriere*.
142. *Stylothorax apicatus* (Blackwall).
Hoddesdon (F. M. C.).
Found occasionally on iron railings. Known also under the name *Neriere*.
143. *Kulczynskiellum fuscum* (Blackwall).
Hoddesdon (F. M. C.).
Known also under the name *Neriere*.
144. *Kulczynskiellum agreste* (Blackwall).
Hoddesdon (F. M. C.).
Known also under the name *Neriere*.
145. *Kulczynskiellum retusum* (Westring).
Hoddesdon (F. M. C.).
Known also under the name *Neriere*.
146. *Lophomma herbigradum* (Blackwall).
Box Wood (F. M. C.).
Known also under the name *Neriere*.
147. *Lophomma punctatum* (Blackwall).
Lea Valley and other marshy districts (F. M. C.).
Known also under the name *Walckenaera*.
148. *Dicymbium nigrum* (Blackwall).
Hoddesdon (F. M. C.).
Known also under the name *Neriere*.
149. *Prosoponcus cristatus* (Blackwall).
Hoddesdon (F. M. C.).
150. *Plæsiocrærus permixtus* (O. P.-Cambridge).
Lea Valley (F. M. C.).
Common in this and other marshy places. Known also under the name *Walckenaera*.
151. *Plæsiocrærus fuscipes* (Blackwall).
Hoddesdon (F. M. C.).
Rare. Known also under the name *Walckenaera*.
152. *Plæsiocrærus latifrons* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Rare. Known also under the name *Walckenaera*.
153. *Plæsiocrærus picinus* (Blackwall).
Hoddesdon (F. M. C.).
154. *Tapinocyba beckii* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
155. *Savignia frontata*, Blackwall.
Hoddesdon (F. M. C.).
Known also under the name *Walckenaera*.
156. *Gongyliidiellum vivum* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Rare and local. Known under the name *Neriere*.
157. *Entelecara erythropus* (Westring).
Roman road, Box Wood (F. M. C.).
Known also under the name *Walckenaera*.
158. *Entelecara trifrons* (O. P.-Cambridge).
Easneye (F. M. C.).
A single male only found.
159. *Entelecara altifrons* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
160. *Areoncus humilis* (Blackwall).
Hoddesdon (F. M. C.).
Rare. Known also under the name *Walckenaera*.
161. *Troxochrus scabriculus* (Westring).
High Leigh (F. M. C.).
Rare. Known also as *Walckenaera aggeris*, Blackwall.
162. *Walckenaeria acuminata* (Blackwall).
Hoddesdon (F. M. C.).
Not uncommon, but the males rare. Known also under the name *Walckenaera*.
163. *Walckenaeria nudipalpis* (Westring).
Hoddesdon (F. M. C.).
164. *Viderius anticus* (Wider).
Hoddesdon (F. M. C.).
A single male only. Known also under the name *Walckenaera*.
165. *Viderius cucullatus* (C. L. Koch).
Lea Valley (F. M. C.).
A single male only.
166. *Lophocarenum parallelum* (Wider).
Hoddesdon (F. M. C.).
Rare. Known also under *Walckenaera*.

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167. *Brachycentrum nemorale* (Blackwall).
Hoddesdon (F. M. C.).
A single male only. Known also under *Walckenaera*.
168. *Minyriolus pusillus* (Wider).
Hoddesdon (F. M. C.).
A single male only. Known also under *Walckenaera*.
169. *Pocadicnemis pumila* (Blackwall).
Box Wood (F. M. C.).
Rare. Known also under *Walckenaera*.
170. *Baryphyma pratensis* (Blackwall).
Lea Valley (F. M. C.).
Rare. Known also as *Walckenaera pratensis* and *W. meadii*, O. P.-Cambridge.
171. *Cornicularia unicornis* (O. P.-Cambridge).
Lea marshes (F. M. C.).
Rare. Known also under *Walckenaera*.
172. *Cornicularia vigilax* (Blackwall).
High Leigh (F. M. C.).
A single male only. Known also under *Neriene*.
173. *Maso sundevallii* (Westring).
Spittle Brook, Hoddesdon (F. M. C.).
Known also under the name *Neriene*.
174. *Moebelia penicillata* (Westring).
Goose Green (F. M. C.).
Under lichens occasionally. Known also under *Neriene*.
175. *Panamomops bicuspis* (O. P.-Cambridge).
High Leigh (F. M. C.).
Not uncommon on railings in April and May. Known also under *Neriene*.
176. *Ceratinella brevipes* (Westring).
Hoddesdon (F. M. C.).
Rare. Known also under *Walckenaera*.

THERIDIIDÆ

The members of this family have eight eyes, situated very much like those of the *Argiopidae*; but the mandibles are usually weak, the maxillæ are inclined over the labium, and the posterior legs have a comb of stiff curved spines beneath the tarsi. The web consists of a tangle of crossing lines, and the spider often constructs a tent-like retreat wherein the egg-sac is hung up. The tarsal claws are three in number.

177. *Theridion formosum* (Clerck).
Hoddesdon (F. M. C.).
Known also as *T. sisypium*, Blackwall.
178. *Theridion tepidariorum*, C. L. Koch.
Hoddesdon (F. M. C.).
179. *Theridion pictum* (Walckenaer).
Hoddesdon (F. M. C.).
180. *Theridion sisypium* (Clerck).
Hoddesdon (F. M. C.).
Known also as *T. nervosum*, Blackwall.
181. *Theridion denticulatum* (Walckenaer).
Hoddesdon (F. M. C.).
182. *Theridion varians*, Hahn.
Hoddesdon (F. M. C.).
183. *Theridion tinctum* (Walckenaer).
Hoddesdon (F. M. C.).
184. *Theridion vittatum*, C. L. Koch.
Hoddesdon (F. M. C.).
Known also as *T. pulchellum* (Walckenaer).
185. *Theridion bimaculatum* (Linnæus).
Hoddesdon (F. M. C.).
Known also as *T. carolinum*, Blackwall.
186. *Theridion pallens*, Blackwall.
Hoddesdon (F. M. C.).
187. *Theridion ovatum* (Clerck).
Hoddesdon (F. M. C.).
Known also under the name *Phyllonethis lineata*.
188. *Episimus lugubris*, Simon.
Hoddesdon (F. M. C.).
Known also as *Theridion angulatum*, Blackwall.
189. *Pholcomma gibbum* (Westring).
Easneye, Ware (F. M. C.).
A single specimen only.
190. *Steatoda bipunctata* (Linnæus).
Hoddesdon (F. M. C.).
Known also as *Theridion quadripunctatum*, Blackwall.
191. *Steatoda guttata* (Wider).
Box Wood (F. M. C.).
Known also as *Theridion guttatum*, Blackwall. A single specimen only.
192. *Pedanostethus lividus* (Blackwall).
Easneye, Ware (F. M. C.).
193. *Pedanostethus clarkii* (O. P.-Cambridge).
Hoddesdon (F. M. C.).
Known also under the name *Neriene*.

PHOLCIDÆ

Spiders with more or less slender bodies and very long slender legs. The eyes are situ-

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ated in three groups—a group of two in the centre and a group of three on each side. The only British species we possess is a well-known frequenter of houses in the southern counties, spinning an irregular web, and moving swiftly with a circular shaking motion when alarmed.

194. *Pholcus phalangioides* (Fuesslin).

Hoddesdon (F. M. C.).

Common but not abundant.

MIMETIDÆ

Spiders of this family are similar in general respects to the *Theridiidæ*, having eight eyes and three tarsal claws. The species of *Ero* construct a small brown pear-shaped or cylindrical egg-cocoon suspended on a fine silken stalk.

195. *Ero furcata* (Villers).

Hoddesdon (F. M. C.).

This spider is known also as *E. thoracica* and *Theridion variegatum*, Blackwall.

DICTYNIDÆ

The spiders belonging to this family possess three tarsal claws, and the eyes, eight in number, situated in two transverse rows, the laterals being in contact. The cribellum (or extra pair of spinning organs) and the calamistrum (a row of curving bristles on the protarsi of the fourth pair of legs) are present in all members of the family. They construct a tubular retreat with an outer sheet of webbing, which is covered with a flocculent silk made with the calamistrum from threads furnished by the cribellum.

196. *Amaurobius fenestralis* (Stroem).

Hoddesdon (F. M. C.).

Not so common as *similis*. Known also as *Ciniflo atrox*, Blackwall.

197. *Amaurobius similis* (Blackwall).

Hoddesdon (F. M. C.).

Common. Known also under the name *Ciniflo*.

198. *Amaurobius ferox* (Walckenaer).

Hoddesdon (F. M. C.).

Common. Known also under the name *Ciniflo*.

199. *Dictyna arundinacea* (Linnæus).

Hoddesdon (F. M. C.).

Abundant. Known also as *Ergatis benigna*, Blackwall.

200. *Dictyna uncinata*, Thorell.

Hoddesdon (F. M. C.).

201. *Dictyna latens* (Fabricius).

Hoddesdon (F. M. C.).

Not common. Known also under the name *Ergatis*.

202. *Lethia humilis* (Blackwall).

Hoddesdon (F. M. C.).

Not common. Known also under the name *Ciniflo*.

203. *Altella spinigera*, O. P.-Cambridge.

Hoddesdon (F. M. C.).

A single specimen only; probably an introduction from abroad amongst hot-house plants. Known also under the name *Amphissa*.

CHERNETES

CHELIFERIDÆ

Out of the twenty species of false scorpions hitherto recorded as indigenous to Great Britain only two have been taken in this county.

204. *Chthonius tetrachelatus* (Preyss).

Hoddesdon (F. M. C.).

205. *Chernes nodosus* (Schränk).

OPILIONES

The harvestmen are spider-like creatures with eight long legs, the tarsi very long and flexible. Eyes simple, two in number, situated on each side of an eye-eminence. Body not divided into two distinct regions by a narrow pedicle as in spiders; abdomen segmentate.

206. *Oligolophus ephippiatus* (C. L. Koch).

Hoddesdon (F. M. C.).

CRUSTACEANS

The student of crustacea will find in this county much more to interest him than might be expected from the printed scientific records. Those indeed which refer to this branch of its fauna are, with one exception, meagre in the extreme, not devoting to the subject more than three or four brief and rather casual notices. In his 'Notes on the River Rib from Standon to its Junction with the Lea,' Mr. A. G. Pullen, F.Z.S., writes that, 'of crustaceans, the crayfish or crawfish, *Astacus fluvialis*, is frequently met with at all parts of the Rib, and is especially abundant near Letchford.'¹ Mr. John Hopkinson, F.L.S., has kindly found for me a notice of its occurrence in the river Gade,² and Mr. A. E. Gibbs, F.L.S., after telling me that 'crayfish are to be found in the river Lea in the neighbourhood of Wheathampstead,' very obligingly went more minutely into the question of the distribution of the species in that neighbourhood. The result of his further enquiries was as follows: 'I am told,' he says, 'that it is not to be found higher up than (*i.e.* on the Luton side of) the Harpenden Great Northern Station, and that it is found from there to Brocket Hall. My informant, Mr. Henry Lewis of St. Albans, tells me it is not so abundant as it used to be, and he is of opinion that the young are eaten by the trout which he says are more numerous than formerly. The crayfish appears to be very local. Although fairly common in the Lea, I cannot hear that it has been found in the Ver, although both streams rise from the chalk and flow through similar country within a few miles of one another. Both Mr. Lewis and his brother, Mr. Arthur Lewis, have tried without success to introduce it into the Ver. Mr. Arthur Lewis says he once turned one hundred dozen into the Ver near St. Michael's Mill, St. Albans, but they seem to have entirely disappeared, only one, which was subsequently taken in an eel trap, having since been seen.' Facilities for obtaining the species in question are of no little value, since a mastery of the details of structure in this one typical form may be made the basis, as Huxley has shown, of a sound zoological education. Such a mastery will certainly be helpful in an extraordinary degree to any one who wishes to examine crustaceans in general and the Malacostraca in particular with an understanding mind, and with insight prepared to find something like order and unity of plan in the mighty maze of their innumerable diversities. It is worth remarking that the technical name of the species is more correctly given as *Potamobius pallipes*, reserving the generic name *Astacus*

¹ *Trans. Herts Nat. Hist. Soc.*, edited by John Hopkinson, F.L.S., F.G.S., vol. ii. p. 136 (1884).

² *Trans. Watford Nat. Hist. Soc.*, vol. ii. p. 126 (1879).

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for the marine lobster, and the specific name *fluviatilis* for a kindred species of crayfish found in various parts of the European continent, but not in England.

Although the common lobster and the common shrimp are easy to obtain inland, as a scientific object of investigation the crayfish has an advantage over both by hitting the happy mean between over large and over small. But all three are convenient to handle, and may be used together to throw light upon the fascinations of comparative anatomy. On the other hand, for the observing of manners and customs, of the arts and crafts, the dwelling-places and the breeding-habits of the living creature—in a word, for all that concerns the now popular study of biology—the river crayfish is of unique importance to Midland carcinologists. In a general way almost every one is willing to admit, with or without reserve, the philosophical axiom that nature makes nothing in vain. Yet scarcely to any one, except a thoughtful expert, will it readily occur to suppose that there can be any special philosophy in the joints of the leg or the body-segments of a *Potamobius*, a creature made to be eaten, an unconsidered trifle, the garnish of a dish! It is not that there has been any such want of appreciation on the part of naturalists, for they at intervals for centuries past have studied this genus with almost loving care. Already in the middle of the sixteenth century observation and experiment were brought to bear upon it. Like man himself, it is tolerably omnivorous. Like so many other crustaceans, it is in part a scavenger. Vegetable food is welcome, but perhaps animal food and offal even more so. Thus the old author Gesner states that if the carcase of a horse or dog or any other animal be submerged, the crayfishes presently like vultures gather about it in swarms, not to quit till every morsel of flesh has been eaten off. He tells also of a man who could not help thinking that these swarms must be generated from the horse's body, like the bees of Aristæus from the corrupting entrails of a slaughtered bull. But when this person had from time to time thrown dead horses into the water, the result of his experiments weaned him from his poetical fancy.¹ The several illustrious men who between Gesner's time and Huxley's have studied the crayfish in various aspects might be thought to have exhausted the subject. But the comparatively recent work of Dr. Theodor List on the motor apparatus of the Arthropoda shows that this is by no means the case. Dr. List tracks the crayfish to its favourite brooks, observes its preference for proximity to a bridge, where it may find places of ambush and shelter from the odious daylight. He descries it lurking among the stones in the bed of the rivulet, with only its large claws emergent, in readiness to snap the passing prey. 'If you attempt to catch it, you become aware that the abdomen, which it flexes several times in rapid succession, is a capital locomotive apparatus. Otherwise by day it is a very lazy customer. But as soon as darkness has set in it leaves its hiding-place and goes on the prowl. With the great claws stretched in advance, the large antennæ feeling about in all

¹ Gesner, *Historiæ Animalium*, liber iv., 1558 (ed. 1604, p. 105).

CRUSTACEANS

directions, the outer maxillipeds in oscillating movement, the tail-fan fully expanded, forward it strides.'¹ Commonly the two large claws or chelipeds seize the food, and the two following pairs of little claws tear it in pieces and pass it on to the mouth organs. Not every one perhaps will have noticed that in lobster and crayfish alike there are three pairs of claws, or will have reflected on the great advantage which the animal derives from having them of different sizes. Not only are the small ones much more conveniently disposed than the great raptorial pincers for conveying morsels of food to the mouth, but by reason of its smallness the chelate ending of these limbs does not interfere with the ambulatory function which they also have to fulfil. For purposes of classification we speak of five pairs of peræopods, walking-legs, or trunk-legs, throughout the Malacostraca, but in function some of them exhibit many modifications. In many species, as in that under discussion, the first pair are rather hands than legs, while, as just observed, the two following pairs are hands and legs at the same time. The crayfish can walk forwards, backwards, or sideways, in water or on land, though more awkwardly on the latter than in the former. How these objects are severally attained by co-ordinated muscles, special modes of articulation, and relative lengths of the limbs, is fully explained in Dr. List's treatise. To one important relation, by way of example, may attention here be directed. In the four hinder pairs, the proper walking-legs, there is not uniformity of action, but a kind of antagonism. In the forward movement the force of the first three pairs acts as a pull, whereas that of the fourth pair plays the part not of a pull but of a push. Accordingly, Dr. List points out, in Huxley's *Crayfish* the frontispiece, though in general an excellent and carefully drawn figure, represents the animal with its feet in a not very natural position, since all the legs are pointing in the same direction. It is not unlikely that the picture was drawn from a 'specimen' rather than from life, so that the artist had no means of knowing that the forward-pointing toes of the last legs ought to have confronting them those of the three preceding pairs.

Turning now to the less conspicuous group of the terrestrial Isopoda, the woodlice, we see by a striking instance that the carcinology of this county, though in appearance very unpromising, is beyond all reasonable doubt potentially rich. About the distribution of these small obscure crustaceans in this district little was known, and nothing published, almost down to the close of the nineteenth century. It then happened that the Rev. Canon Norman, F.R.S., an acute and trained observer, removed from the north of England to a residence in Berkhamsted. An instructive result was speedily forthcoming. Ten species of Oniscoidea were recognized by Dr. Norman as belonging to Hertfordshire. These he found, not by traversing and exploring the length and breadth of the county, but all of them in his own garden. The complete muster roll of species of this group, as at present definitely

¹ List, 'Morphologisch-biologische Studien über den Bewegungsapparat der Arthropoden,' in *Morphol. Jahrbuch*, vol. xxii. p. 412 (1895).

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known for the whole of Great Britain and Ireland, only reaches the number of twenty. Of these one is found in Ireland and has not hitherto been found in England, while five have been found in England which have not yet been discovered in Ireland. Two of the twenty species are not to be expected at any great distance from the coast, and a third is perhaps only a recent importation into our island, an immigrant from the continent. Of the ten species found in the Berkhamsted garden one was an addition not merely to the fauna of the county but to the fauna of the country, completing the score of which the United Kingdom can boast.

The Oniscoidea, or terrestrial isopods, best known among us by the name of woodlice, and in French as cloportides or door-nails, are divided into four principal families—the Ligiidæ, Trichoniscidæ, Oniscidæ, and Armadillidiidæ. These are separated by numerous differences, and united by numerous points of agreement. All in common have sessile eyes, unless they happen to be blind. All in common have seven pairs of trunk-legs, though as a rule they quit the egg with the seventh pair undeveloped or ineffective. All in common have the breathing apparatus not connected with the head or trunk, but pertaining to the appendages of the pleon or tail part, the branchial structure being sometimes modified the better to suit atmospheric respiration. In all these respects they differ strikingly from the crayfish, though equally with it belonging to the Malacostraca. With the first of the four families, the maritime or coast-loving Ligiidæ, we are not here concerned. The other three families are represented in Hertfordshire by nine genera, including the ten species already referred to, on which some brief notes may be offered. The first three species to be mentioned belong to the family Trichoniscidæ.

Trichoniscus roseus (Koch) has been described under two other generic names, *Itea* and *Philougria*, the latter meaning a lover of damp, which would be a fairly appropriate designation for almost all the isopods that ever existed. The specific name *roseus* refers to a character which the inexperienced would little expect to find, and which is in fact very rare, in a woodlouse, namely the beautifully delicate rose-tint of its colouring. Many species display bright colours and highly effective patterns, while some are modestly dressed in white or creamy hues, and others in sober greys and browns. But no other species is at once so beautiful and so unobtrusive as the little *Trichoniscus roseus*. Its distribution is widely extended. It is very agile, like many others of its family. It may not have a feeling for poetry, but by all its manœuvres to escape observation it shows plainly that, if ‘many a rose is born to blush unseen,’ such is the privacy it earnestly desires for itself.

Trichoniscus pusillus, Brandt, is a still smaller species, which has passed under the same series of generic names and also under three specific names other than that which is proper to it, one of these synonyms being *celer*, in allusion to the great celerity of its movements, by which it is quite capable of foiling the efforts of a pursuer who is

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unready and inexperienced. Its glossiness, its nimble movements, its red-brown colour, and its angular outstanding spiny little second antennæ make it easy of recognition.

Haplophthalmus danicus, Budde-Lund, was not known in England until discovered by Dr. Norman, who says, 'I have found this pretty little species in my garden here (the Red House, Berkhamsted, Herts). It occurs in company with *Trichoniscus roseus* in a cool greenhouse. The genus is allied to *Trichoniscus*. The species may be recognized by its simple eyes and the longitudinal series of tubercles which pass down the body. Other specimens in my collection are from Denmark (Copenhagen Mus.). It has also been found in Norway, Holland, and France. A near ally, *H. mengii*, Zaddach, which is known to have a wider distribution, may be found in Great Britain. It is distinguished from its ally by having six longitudinal finely crenulated ribs passing down the body, instead of the rows of tubercles, and by the peculiarity of having two very prominent ribs on the back of the third segment of the pleon.'¹

This quotation may serve to stimulate research for these minute forms, in which, as the generic name implies, the eyes are simple. In *Trichoniscus* the eyes have each three visual elements. *Haplophthalmus danicus* is greyish white in colour, and not quite a sixth of an inch long. The companion species is scarce an eighth of an inch long, but Professor Sars says that 'it moves very slowly, and, in spite of its small size, is easily detected by the pure white colour of the body.' Yet, as the young ones of some of the larger woodlice are also slow-moving, small and white, there is opportunity for untrained eyes to be deceived.

The six following species are all included in the family Oniscidæ:—

Oniscus asellus, Linn., is found not only here, but everywhere, if by everywhere we are contented to understand Europe and North America, with the Azores, Iceland, and Greenland. As it attains a length of two-thirds of an inch, and is one of the broadest of our woodlice, its familiar form can be discerned by most persons without the aid of microscope or even spectacles.

Philoscia muscorum (Scopoli), though not nearly so large as the preceding, is of respectable size and very common, the inseparable companion of rural life.

Platyarthrus boffmannseggii, Brandt, is humble in size, though so ample in name. Its legs are short and thick, and the second antennæ have the joints of the peduncle flattened, whence Brandt gave it a generic name meaning broad of limb. But it has no eyes, so that another author, Schöbl, later on, in ignorance of Brandt, named the genus *Typhloniscus*, meaning the blind woodlouse; while in between these two authors Koch called the species *Itea crassicornis*, in allusion to the thickness of its antennæ. Notwithstanding its extensive distribution, the only chance of finding it is by peeping into ants' nests, and then when the disturbed ants are scurrying about, as if the world depended on the security of their offspring, it is an almost pathetic sight to see the little white, sight-

¹ *Annals and Magazine of Natural History*, ser. 7, vol. iii. p. 73 (1899).

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less, slow-moving woodlouse left on the floor of the nest unfriended and alone.

Porcellio scaber, Latreille, is nearly as long but not quite so broad as *Oniscus asellus*, from which it is distinguished by its granular roughness. It is even more common and more widely dispersed, and as a rule more sombrely dark, but it exhibits varieties in colour and markings.

Metoponorthus pruinosus (Brandt) has 'the forehead straight,' a feature to which the Danish writer Budde-Lund alludes in the name he framed for its genus. In *Oniscus* and *Porcellio* and various other genera it will be found that the front line of the head displays a median lobe between two lateral horns or projections, but in *Metoponorthus* all this indenturing is flattened down and obscured. The present species is said by Budde-Lund to have the world for its fatherland, being a cosmopolitan that by navigation has wandered all over the globe.

Cylisticus convexus (De Geer) is far from being familiar in England, although its distribution is probably extensive in our islands, as it certainly is in the north and middle of Europe. Unlike the other members of its family, this species has the capacity of rolling itself up into a ball, a defensive device that must puzzle and surprise many opponents. The convexity of the body which makes this englobing of itself possible to the animal is noted in the specific name chosen by De Geer in 1778. But long afterwards Lereboullet, dealing with the same species in 1853, named it *Porcellio armadilloides*, thereby recognizing its family likeness to *Porcellio* and its specific or particular likeness to members of the family Armadillidiidæ, to which the next species belongs.

Armadillidium vulgare (Latreille) shares perhaps with *Oniscus asellus* and *Porcellio scaber* the familiarity that breeds contempt, and in the competition for popular notice it surpasses both by reason of the habit just described, which it has in common with *Cylisticus convexus*. Here, however, the habit is not exceptional. It is characteristic of the family, that is to say, it belongs as a rule to all the genera and species, to have the body very convex and contractible into a globe.

In concluding this interesting list of numerous species from a comparatively small tract of ground, it should be mentioned that such a collection is not entirely without precedent elsewhere, that an old highly cultivated and diversified garden is a specially favourable territory, and lastly that, little esteemed as woodlice are among gardeners, they here evidently thrive and flourish without any serious detriment to fruit and flowers, and rather to the satisfaction than otherwise of the scientific horticulturist who is their overlord.¹

For *Oniscus asellus*, for *Armadillidium vulgare*, for the freshwater

¹ *Annals and Magazine of Natural History*, ser. 7, vol. iii. pp. 72-75 (1899). In this paper six of the species are expressly referred to Hertfordshire, while only general distribution is noted for *Oniscus asellus*, *Philoscia muscorum*, *Porcellio scaber*, and *Armadillidium vulgare*. But I have in manuscript from Dr. Norman a list of all the ten as found in his garden, and while staying with him at Berkhamsted was able to observe almost all of them in their actual haunts, and in particular *Haplophthalmus danicus* outside the greenhouse.

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isopod *Asellus aquaticus* (Linn.), and for the freshwater amphipod *Gammarus pulex* (Linn.), Mr. John Hopkinson, editor of the *Transactions of the Hertfordshire Natural History Society*, informs me by letter that he can personally vouch as belonging to the fauna of Hertfordshire.

The Entomostraca of the county still await their chronicler. Mr. John Hopkinson has kindly supplied me with a reference to the above mentioned *Transactions*, vol. vii. p. xlix., which notes that a pond in Tittenhanger Park contains several species of *Daphnia* and *Cyclops*. Though there is no reason to distrust the information, it is rather vague. More important is the manuscript list with which Mr. Hopkinson has obliged me, containing the names of fifteen species of Entomostraca which he has himself observed in the neighbourhood of Watford, when studying pond life from twenty to twenty-five years ago. The list comprises the Phyllopod, *Chirocephalus diaphanus*; the Cladóceræ, *Daphnia pulex*, *Daphnia vetula*, *Daphnia reticulata*, *Eurycereus lamellatus*; the Ostracóda, *Cypris tristriata*, *Cypris fusca*, *Cypris minuta*, *Candona reptans*, *Candona bispida*; and the Copépoda, *Cyclops signatus*, *Cyclops tenuicornis*, *Cyclops serratulus*, *Canthocamptus minutus*, and *Diaptomus castor*. Of these the most striking is undoubtedly *Chirocephalus diaphanus*, Prevost, which appears to be far more common than was at one time supposed. In regard to the other species, there has been of late years so much revision of nomenclature that few lists dating back a quarter of a century can be expected to correspond at all closely with the names now accepted. Sometimes also an older name has been found on more minute investigation to cover more than a single species. Thus Baird's *Daphnia reticulata* answers in part to *Ceriodaphnia reticulata* (Jurine), but in part to *Ceriodaphnia megalops*, Sars, and without fresh inquiry it is not possible to say which of the two is the Hertfordshire species. Very likely both occur in the county. Baird's *Daphnia vetula* is now called *Simocephalus vetulus* (O. F. Müller).¹ For the five species of Ostracoda respectively, the names preferred in Brady and Norman's recent monograph are *Cypris virens* (Jurine), *Cypris fuscata*, Jurine, *Cyclocypris lævis* (O. F. Müller), *Erpetocypris reptans* (Baird), and *Cypris fuscata*, Jurine.² From the last of these changes it will be perceived that, while one name may sometimes cover two species, in return two names may sometimes cover but one species. In the group of Copepoda, *Cyclops tenuicornis*, Lubbock, and in part *Cyclops signatus*, Brady, are both now made synonyms of *Cyclops albidus*, Jurine.³ For *Canthocamptus minutus* the generic name should rather be *Canthocampus*. *Cyclops fimbriatus*, Fischer, is recorded by Dr. G. S. Brady, on the authority of Mr. Scourfield, from Stanstead, Herts.⁴

Of the occurrence of parasitic Copepoda in Hertfordshire I find no express record, but in many instances their presence may safely be inferred

¹ Scourfield, *The Essex Naturalist*, vol. x. pp. 314, 315 (1898).

² *Trans. Royal Dublin Soc.*, ser. 2, vol. iv. pp. 74, 73, 69 (compared with vol. v. p. 718), 84.

³ Scourfield, *The Essex Naturalist*, vol. x. p. 325 (1898).

⁴ *Nat. Hist. Trans. Northumberland, Durham, and Newcastle-upon-Tyne*, vol. xi. p. 91.

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from that of their hosts. Couch, in his *History of the Fishes of the British Islands*, vol. iv. p. 38, when discussing the lake bream, *Cyprinus* (or *Abramis*) *brama*, Linn., says, 'The *Book of St. Albans* is a further witness that "the breame" was accounted "a noble fysshe and a deyntous," for the taking of which particular directions were given.' In the same volume, p. 157, he says of the pike, *Esox lucius*, Linn., 'That it was known and greatly valued in England, at a time far preceding that in which Leonard Massel is reported to have introduced it, may be seen in the *Book of St. Albans*.' Now the bream supports two remarkable parasites, one belonging to the family Lernæidæ, the other to the family Lernæopodidæ. The former is named *Lernæocera cyprinacea* (Linn.). In the older and fixed condition the females lose all likeness to the normal appearance of the Copepoda, becoming long and worm-like, without limbs, and the head bearing horn-like processes. The maxillipeds are short.¹ The other species, *Tracheliastes maculatus*, Kollar, is remarkable by having its maxillipeds long and arm-like, united at the ends, and provided with an organ of attachment.² On the gills of the pike *Ergasilus sieboldii*, von Nordmann, makes itself at home. This species has the second antennæ very long and arm-like, but it is much less anomalous in its general appearance than the two preceding forms.³

It may be said that only a beginning has yet been made in describing the crustaceans of Hertfordshire, but it is clear, from those which have been brought to light by a very few observers, that several interesting species are here at the disposal of the student, and that diligent research is likely to be rather richly rewarded.

¹ Zaddach, *Synopseos Crustaceorum Prussicorum Prodrömus*, p. 39 ; Bassett-Smith, *Proc. Zool. Soc.*, f. 480 (London, 1899).

² Zaddach, *loc. cit.* ; Bassett-Smith, *loc. cit.* p. 521.

³ Zaddach, *loc. cit.* ; Bassett-Smith, *loc. cit.* p. 443.

FISHES

No complete list of the fishes of Hertfordshire has ever been published. The present compilation is mainly prepared from notes supplied by Mr. John Hopkinson, who has kindly furnished references to all the publications known to him, and also a list of the species occurring in the Tring reservoirs.

The earliest list, a very incomplete one, appeared just two centuries ago in Sir Henry Chauncy's *Historical Antiquities of Hertfordshire* (1700). Nearly half a century earlier than this Izaak Walton, in one of our most cherished English classics, the *Compleat Angler* (1653), had alluded to nearly all the species now known from his favourite river the Lea, without however in every case specifying that all these occur in it; but he mentions some other fishes as inhabiting other rivers which he names, so that it is not unreasonable to assume his observations on the fishes to which he assigns no locality to have been made on those of the Lea.

Of recent publications the following are the most important: J. E. Littleboy, 'The Bulbourne and Gade, with Notes on the Fish of the Two Rivers,' *Trans. Watford Nat. Hist. Soc.*, ii. (1879) pp. 113-128; R. B. Croft, 'Izaak Walton and the River Lea,' *Trans. Herts Nat. Hist. Soc.*, ii. (1882) pp. 9-16; M. Davies, 'Random Notes by an Old Angler on the Lea and its Fishes,' *Essex Naturalist*, xi. (1899) pp. 133-135.

TELEOSTEANS

ACANTHOPTERYGII

1. Perch. *Perca fluviatilis*, Linn.

Occurs in all the rivers and in Tring reservoir.

2. Ruffe or Pope. *Acerina cernua*, Linn.

Not uncommon in the Lea and on record from the Bulbourne; also found in Tring reservoir.

3. Miller's Thumb. *Cottus gobio*, Linn.

Prefers gravelly streams.

HEMIBRANCHII

4. Three-spined Stickleback. *Gastrosteus aculeatus*, Linn.

Abundant almost everywhere.

5. Ten-spined Stickleback. *Gastrosteus pungitius*, Linn.

On record from the Lea.

HAPLOMI

6. Pike. *Esox lucius*, Linn.

OSTARIOPHYSI

7. Carp. *Cyprinus carpio*, Linn.

In still waters. Sometimes taken in the Lea.

8. Barbel. *Barbus vulgaris*, Flem.

Occurs in the Lea, but not in the Bulbourne or Gade. Both this and the preceding species do not appear on the list of Tring fishes.

9. Gudgeon. *Gobio fluviatilis*, Flem.

In all the rivers and in Tring reservoir.

10. Chub. *Leuciscus cephalus*, Linn.

On record from all the rivers, but not from Tring reservoir.

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11. Rudd. *Leuciscus erythrophthalmus*, Linn.

12. Roach. *Leuciscus rutilus*, Linn.

13. Dace. *Leuciscus dobula*, Linn. (*L. vulgaris*, Day).

14. Minnow. *Leuciscus phoxinus*, Linn.

15. Tench. *Tinca vulgaris*, Cuv.

Like the carp, more confined to still waters.

16. Bream. *Abramis brama*, Linn.

Recorded from the Lea and the lower reaches of the Gade.

17. White Bream. *Abramis blicca*, Bl.

From the Lea.

18. Bleak. *Alburnus lucidus*, Heck. & Kner.

Recorded from the Lea and the Bulbourne. The 'Fresh-water Sprat' of Izaak Walton.

19. Loach. *Nemachilus barbatula*, Linn.

Recorded from the Lea, the Bulbourne and the Gade.

MALACOPTERYGII

20. Salmon. *Salmo salar*, Linn.

Was probably extinct as a Hertfordshire fish before the end of the eighteenth century. Its presence in the Lea is last mentioned in 1735 by Farmer, in his *Abbey of Waltham*. The Lea Conservancy forbid the capture of any salmon of less than 4 lb. weight.

21. Trout. *Salmo trutta*, Linn.

The small brown trout are found in most rivers. A fine salmon-trout was reported to have been taken from the Lea in 1856.

22. Grayling. *Thymallus vexillifer*, Linn.

It is doubtful whether this fine fish now occurs in any Hertfordshire river. Several attempts have been made to reintroduce it both into the Colne and the Lea, and various reports as to its being on the increase or the reverse have been made.

APODES

23. Eel. *Anguilla vulgaris*, Turt.

CYCLOSTOMES

24. Lampern. *Petromyzon fluviatilis*, Linn.

Recorded from the Lea and the Gade; said to be tolerably abundant.

REPTILES AND BATRACHIANS

Very little is recorded of the reptiles of Hertfordshire, and of their distribution in the county still less has been ascertained. The only species of which the writer can find a published record are the slow-worm (*Anguis fragilis*) and the grass snake (*Tropidonotus natrix*). It is however most improbable that any species will be added to the following list. The list of batrachians is also probably complete, but here again scarcely anything is known of the distribution of the species within the county. The common frog (*Rana temporaria*) and the natterjack toad (*Bufo calamita*) are the only forms of which there is any actual record.

REPTILES

LACERTILIA

1. Common Lizard. *Lacerta vivipara*, Jacq.

The common or viviparous lizard is almost ubiquitous. It may frequently be seen darting into our hedge-banks or basking in the sun on our sandy commons, but is very wary, not allowing itself to be closely approached. Mr. Alan F. Crossman says that it is 'common on Berkhamsted Common,' and the same may be said of Chipperfield Common, Royston Heath, and other similar tracts of uncultivated land. About fifteen years ago, when the present writer was residing at Wansford House, Watford, one much more decidedly green in colour than usual came into his garden. It was not disturbed, but soon disappeared.

2. Slow-worm. *Anguis fragilis*, Linn.

Of this common species, also known as the blind-worm, we have only one record. A specimen which had not long cast its skin was captured at Watford about May 1st, 1886, and was handed over to Mr. Arthur Stradling,¹ who recorded it with the following species.

¹ *Trans. Herts Nat. Hist. Soc.*, vol. iv. p. 119 (1887).

OPHIDIA

3. Grass Snake. *Tropidonotus natrix*, Linn.

(*Natrix torquata*, Ray.)

The grass or ringed snake is probably not uncommon in the county, but the only published record we have is of one seen near Aldenham in May, 1886, by Mr. T. Villiers. It was rather a large one, being 4 feet long, and had left its winter quarters earlier than might have been expected in the cold weather then prevailing. Its occurrence was recorded by Mr. Arthur Stradling, the well-known herpetologist, who resided for some years in Watford, and was twice President of the Hertfordshire Natural History Society. About twenty years ago a ringed snake was found near the river Ver at Kingsbury, St. Albans.

4. Viper. *Vipera berus*, Linn.

It is probable that the viper or adder, which is the only venomous serpent we have, is rapidly being exterminated in the county, for whenever one is mentioned it is stated to have been killed. A specimen found some years ago in the parish of Kensworth, Herts, is in the possession of Mr. James Saunders of Luton, for whom it was preserved.

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BATRACHIANS

ECAUDATA

1. Common Frog. *Rana temporaria*, Linn.

Although everywhere common, and perhaps because of this, the only definite records of the local occurrence of this species are in the observation of the dates of appearance of frog-spawn at Royston, Harpenden, St. Albans, Watford, Hertford, Ware and Hoddesdon by members of the Hertfordshire Natural History Society. At one or more, and usually several, of these places, the date has been recorded for the fifteen years 1876 to 1890.¹ The earliest date was February 23rd, 1884, the latest April 4th, 1876, and the average date of first appearance March 14th.

2. Common Toad. *Bufo vulgaris*, Laur.

Too common to require further mention.

3. Natterjack Toad. *Bufo calamita*, Laur.

In a short note on the occurrence of the natterjack at Coombe in Surrey, in *Science*

¹ Hopkinson, Annual Reports on Phenological Phenomena observed in Hertfordshire, 1876-90, *Trans. Watford Nat. Hist. Soc.*, vol. ii., and *Trans. Herts Nat. Hist. Soc.*, vols. i.-vi. (1878-91).

Gossip for 1865 (p. 206), Mr. W. R. Tate incidentally mentions that this species is found 'about Berkhamsted, Herts'; and in Boulenger's splendid monograph of *The Tailless Batrachians of Europe*, published by the Ray Society in 1898, Hertfordshire is given as one of the seventeen English counties in which this batrachian occurs (p. 244).

CAUDATA

4. Great Crested Newt. *Molge cristata*, Laur.

This species, which is also known as the common warty newt, is probably of frequent occurrence throughout the county. Mr. Alan F. Crossman states that it 'is not uncommon in West Herts.' The writer remembers finding it in the moat of Berkhamsted Castle so long ago as his schooldays, and has since met with it in several ponds in the neighbourhood of Watford and St. Albans.

5. Common Newt. *Molge vulgaris*, Linn.

(*Triton punctatus*, Latr.)

More common than the great crested newt, this 'eft,' as newts are here called, occurs habitually in ponds and ditches of clear water. Mr. Crossman says that it is 'common around Berkhamsted.'

BIRDS

Hertfordshire compares favourably with most other counties in its list of birds, although it has not the advantages of a sea coast. Partially to compensate for this, it has at least two good-sized areas of artificial water, which have undoubtedly contributed towards increasing its list of feathered visitors. Indeed the reservoirs at Tring and Elstree form excellent examples of the methods by which civilization indirectly induces birds to become resident in a place where otherwise they would probably never have come at all, even as accidental visitors. The county of Hertford is not from an ornithological point of view particularly well off for rivers, as although there are a good many small streams, few of them are really large enough to be attractive to wildfowl. One may roughly divide Hertfordshire into two districts for the purpose of studying its avifauna—the northern, which is chiefly composed of open hilly country, and the southern, which is enclosed and well wooded, with fine parks and commons scattered about it.

The first division, which comprises only a small area as compared with the other, practically consists of a range of chalk hills running across the north of the county from east to west: these hills, which somewhat resemble the downs in Sussex and Berkshire, though on a smaller scale, are to a great extent unenclosed, although this is not so much the case now as in former times. Scattered about over these are small plantations, principally composed of conifers, which are the chief strongholds in the county of the long-eared owl (*Asio otus*). This part of the county was formerly the resort of certain species of birds which love the open country, but these have now unfortunately disappeared before enclosures and improved methods of cultivation.

The other division, which is composed of enclosed lands, abounds in hedgerows and woods which form attractive homes for many of our smaller birds. There the avifauna differs considerably from that found further north, as warblers and birds of that description take the place of the finches and buntings of the open country, while on the gorse-covered commons, so abundant in Hertfordshire, one may see the stonechat (*Pratincola rubicola*), whinchat (*P. rubetra*), grasshopper-warbler (*Locustella naevia*), and nightjar (*Caprimulgus europæus*). This part of the county is more or less undulating, and on many of the streams flowing down the valleys one may find the dabchick (*Podiceps fluvialis*). In the extreme south of the county there is less arable and more grass land, and the woods are as a rule much smaller; the hedgerows however are well timbered. This is the last haunt of the carrion-crow (*Corvus*

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corone), a bird which is decidedly on the decrease on account of game preserving. In this district there is Elstree reservoir, a piece of water which has considerable attractions for wildfowl, although not to so great an extent as the reservoirs at Tring.

Of the rarer birds which have occurred in Hertfordshire, one at least has never been recorded elsewhere in the British Isles ; this is the rock thrush (*Monticola saxatilis*). Amongst other rarities which have from time to time been obtained, may be mentioned the woodchat-shrike (*Lanius pomeranus*), two-barred crossbill (*Loxia bifasciata*), rustic bunting (*Emberiza rustica*), roller (*Coracias garrulus*), glossy ibis (*Plegadis falcinellus*), Pallas's sand grouse (*Syrrhaptes paradoxus*), and Baillon's crake (*Porzana bailloni*).

I am afraid that the list of disappearing and extinct species includes some very interesting birds. The causes of their disappearance are varied, but all are directly or indirectly due to the influence of man. Of the direct causes, game preserving is responsible for the destruction in many places of birds of prey, though there are fortunately many and increasing instances of game preservers who set a good example by using every effort for the protection of rarer species. The way by which man indirectly destroys and drives away various birds is by enclosing and planting land which was formerly open, and also by the use of the drill and hoe where formerly seed was only scattered broadcast. In those days the great bustard (*Otis tarda*) and stone-curlew (*Ædicnemus crepitans*) ran no risk of having their eggs destroyed by the horse-hoe. To the alteration in the aspect of the country caused by planting and enclosures may be partially attributed the non-appearance nowadays of the 'trips' of dotterel (*Eudromias morinellus*) which formerly visited the northern hills in the spring and autumn migration, though, no doubt, this can also be accounted for by the decrease of this bird as a breeding species in the British Isles.

To turn to the more pleasing side of the picture, one could mention many birds, which quite recently were considered rare, but which now are plentiful. This undoubtedly is in many cases due to the very cause which has been inimical to many of the decreasing species, namely, enclosing, planting, and keeping coverts quiet. With no coverts, we should be without many of our warblers, and should only have such small birds as are partial to more open country, few of which are really fine songsters, and thus we should be unable to enjoy one of the greatest pleasures of the country. Civilization has also increased the number of our resident species in another direction. Canals were first introduced into this country to any great extent by the third Duke of Bridgewater, who lived at Ashridge Park ; and it is to canals that we owe the existence of the reservoirs at Tring, which are for the purpose of keeping up the supply of water in the Grand Junction Canal. These reservoirs, of which there are now four, comprise about two hundred acres of water, the whole of which, with the exception of about ten acres, is in Hertfordshire. The sporting rights

BIRDS

are reserved to the owner of the Tring Park estate, and, owing to the reservoirs being strictly preserved, they form a splendid home for three or four species of ducks, while the great crested grebe (*Podiceps cristatus*) nests there in numbers such as are to be found at few other places in the British Isles. In addition to this, they offer great attractions to birds passing on migration, which but for the water might never alight in Hertfordshire at all.

Turning from field natural history to the more scientific side of the subject, we find that practically nothing has been done in this way for Hertfordshire. There is no really good collection of local birds in existence. No doubt there are in the Tring Museum many specimens which have been obtained in the county, but they are quite a minor detail in a collection which is one of the finest in the world. Specimens of various sorts which have been procured locally are preserved in many parts of the county, but there are no organized collections, though now there is a county museum at St. Albans it is hoped to form one there. The most interesting lot of local birds is that belonging to the Hon. A. Holland-Hibbert, at Munden near Watford. This comprises comparatively few specimens, but in it are included several birds of great local interest, most of which were obtained in the neighbourhood between 1840 and 1850.

No history of the birds of Hertfordshire ever appears to have been published, but for the last twenty-five years a great deal of information has been published in the *Transactions* of the Hertfordshire Natural History Society and its predecessor, the Watford Natural History Society. The late J. E. Littleboy, who lived at Hunton Bridge, was the first to collect any information about the county birds, and it is to him that we owe so much of our knowledge of the Hertfordshire avifauna. The records contained in the annual reports to the above societies form the foundation of the following list of birds, and to this I have added all facts that I have been able to glean from any books and zoological journals bearing on the subject, as well as any notes of my own that seemed to me to be of interest. Having regard to this, it appeared best to me to put references to such records in the list as have been obtained from other sources than the societies' *Transactions* and my own notes, and this course I have accordingly followed.

1. Missel-Thrush. *Turdus viscivorus*, Linn.

This species is a fairly plentiful resident throughout the county, but its numbers are at times greatly increased by immigrants. This was especially the case during the winter of 1899-1900, when there was apparently a very considerable influx into the county, as I saw them in many places in good-sized flocks.

2. Song-Thrush. *Turdus musicus*, Linn.

This is a common bird in Hertfordshire. Albino varieties of it have occasionally occurred. One obtained was white, with al-

most red eyes, and was caught by a cat belonging to Mr. Dickenson, of Harpenden Road, St. Albans, who I believe still has the bird in his possession. A hybrid also of this species and the blackbird (*T. merula*) was obtained at Tring on January 25th, 1886. This latter occurrence was reported to the late J. E. Littleboy by the Hon. Walter Rothschild.

3. Redwing. *Turdus iliacus*, Linn.

The redwing is a regular winter visitor, but its numbers vary greatly in different years.

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The earliest date I have of its arrival is in 1891, when a bird of this species was seen at St. Albans on September 14th. Curiously enough, redwings had stayed at St. Albans as late as April 28th in the preceding spring.

4. Fieldfare. *Turdus pilaris*, Linn.

The fieldfare appears to be much commoner than the redwing, and is more regular in the numbers that visit us. In 1887 this species stayed with us as late as May 8th, when some were seen at Great Gaddesden, while in 1891 it was first observed at St. Albans on September 15th, both of which are rather unusual dates.

5. Blackbird. *Turdus merula*, Linn.

This is a common bird in this as in other counties, and it appears to be more subject to albinism than others of the thrush family, many white and pied varieties having been obtained in different parts of Hertfordshire.

6. Ring-Ousel. *Turdus torquatus*, Linn.

This bird is an irregular visitor on migration, although probably it occurs more frequently than is recorded. The most noticeable fact about its appearance in Hertfordshire is the lateness of the dates on which it has been seen. The various records I have set out below will show how this species, which is only a summer visitor to most parts of the British Isles, does extend its stay with us to a much later date than is usual with most summer migrants. The first mention I have of this bird in Hertfordshire is a note by the late J. E. Littleboy of having seen a ring-ousel at Hunton Bridge on November 14th, and again on the 21st, in 1877. In the following year he saw a pair at the same place on November 3rd; while on the 6th of that month one was observed near Rickmansworth. In 1881 one of these birds, with one of its wings nearly severed from the body, was picked up under the telegraph wires near Royston on May 20th; and on October 29th Mr. Clutterbuck found one near Stanmore Common, which he forwarded to Mr. Littleboy. A ring-ousel was seen at Chalk Hill near Watford, on September 11th, 1882, and again on the 13th; while on December 12th Mr. Littleboy saw two or more at Caldicott Hill. In 1883 one was shot near Royston on September 12th, while a specimen was obtained at Therfield on October 13th, and another between Hertford and Ware on the 17th of the same month, a fourth being procured near Hertford on November 25th. Mr. Littleboy identified a pair between Hunton Bridge and King's Langley on November 15th, 1885, and saw another

in the same neighbourhood on September 16th of the following year. In 1886 two were shot at Tring in July, while a third was obtained there in the following October. I saw a ring-ousel on Berkhamsted Common on April 7th, 1895; and Mr. H. S. Rivers identified one at Sawbridgeworth, on the other side of the county, two days later. The last record I have is of a bird seen by my brother on Berkhamsted Common on May 8th, 1896.

7. Rock-Thrush. *Monticola saxatilis* (Linn.).

To Hertfordshire belongs the honour of producing the first, and indeed only, authenticated example of this species that has been recorded in the British Isles. As long ago as May 19th, 1843, a Mr. Joseph Trigg shot a rock-thrush which was sitting on an ash tree at Therfield, in the north of the county. The bird was shown to the late Mr. William Yarrell in the flesh, and was figured by him in his book on British birds, from the plate of which it appears to have been a male. The specimen was skinned by John Norman of Royston, and is, I believe, now in the collection of Mr. F. D'Arcy Newcome of Feltwell Hall, Norfolk.

8. Wheatear. *Saxicola ænanthe* (Linn.).

This species is a regular visitor on migration, usually appearing towards the end of March, although in 1885 Mr. Henry Lewis identified it at St. Albans on February 22nd. As a breeding species in Hertfordshire I am afraid it has greatly decreased. It is nowadays only found in quite small numbers during the nesting season along the north of the county, where formerly it was very common. Casual pairs are occasionally found nesting in other places, but undoubtedly the open country to the north is its favourite haunt.

9. Whinchat. *Pratincola rubetra* (Linn.).

The whinchat is found scattered all over the county during the summer, frequenting commons and grass fields principally, but not despising railway embankments and other waste places. Usually arrives about the 21st of April.

10. Stonechat. *Pratincola rubicola* (Linn.).

This bird, which is often known as the furzechat, may be found in comparative abundance on many of our commons. It is a partial migrant, though in mild winters it does not leave us. Should, however, hard weather come for any length of time, these birds usually leave for the south. The stonechat is an early nester, as I have seen fully-fledged young birds at the end of April. I

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have found the egg of the cuckoo in a nest of this species.

11. Redstart. *Ruticilla phœnicurus* (Linn.).

This is a common summer migrant which is found in considerable numbers wherever suitable nesting-places can be obtained. In 1886 one was seen at St. Albans on March 28th, but its usual date of arrival is about the second week in April. The nesting sites chosen by this bird are very varied: during the present year (1900) I found a nest in a hole which had apparently been dug out by a sand-martin (*Cotile riparia*) in a claypit at a brick kiln near Berkhamsted.

12. Black Redstart. *Ruticilla titys* (Scopoli).

We are indebted to a Mr. A. Sainsbury Verey, of Heronsgate near Rickmansworth, for the addition of this species to the county list. In a letter to the *Watford Observer* of April 1st, 1893, he stated that, while watching for wheatears in his field, the note of a redstart attracted his attention, and on looking at the bird he was immediately struck by its dark back as it sat perched on a wire fence not far away. The bird permitted a close approach, and turning round showed the dark colour of its throat and body, thus confirming his first impression that it was an example of a black redstart. In a further letter to Mr. Henry Lewis, Mr. Verey said that the bird was first observed on March 28th, and that it stayed for two days, and being very tame, gave him ample opportunities of studying it and determining its species.

13. Redbreast. *Erithacus rubecula* (Linn.).

This bird, as in other counties, is an extremely common resident, and many are the curious nesting-places that have been chosen by it in Hertfordshire. One or two albino or partial albino varieties have also been obtained, while on two occasions at least pure white eggs of the robin have been found in the place of those of a normal colour.

14. Nightingale. *Daulias lusciniæ* (Linn.).

This, the finest of our native songsters, is to be found pretty generally distributed throughout the county, although perhaps towards the north it is hardly as plentiful as elsewhere. The earliest record I have of its arrival is April 7th, on which date it was seen at Harpenden in 1884.

15. Whitethroat. *Silvia cinerea* (Bechstein).

The common whitethroat is very plentiful throughout the county, usually arriving about April 20th.

16. Lesser Whitethroat. *Silvia curruca* (Linn.).

This is a bird which in Hertfordshire seems to vary greatly in numbers in different years, sometimes being very plentiful, but at others quite uncommon. It generally arrives about the same time as the last-mentioned species.

17. Blackcap. *Silvia atricapilla* (Linn.).

This is a common summer visitor to Hertfordshire, appearing about the middle of April. In 1896, however, Mr. H. R. Rivers observed it at Sawbridgeworth on March 24th. In May, 1900, I came across two nests of this species, which varied considerably from the usual nest of a blackcap; instead of being made of grass on the outside, they were composed chiefly of sheep's wool with a little grass mixed with it.

18. Garden-Warbler. *Silvia hortensis* (Bechstein).

The garden-warbler seems distributed throughout the county, though not in large numbers. It prefers the neighbourhood of woods, and usually arrives towards the end of April.

19. Dartford Warbler. *Silvia undata* (Boddaert).

Hertfordshire should be an ideal county for this bird on account of its many gorse-covered commons. It was not however until 1897 that it was actually identified with us. On May 1st of that year Mr. Charles Worte with a friend, both of whom were well acquainted with the species, recognized a pair of these birds on a small common, known as Commonwood Common, near Chipperfield, and watched them for some time. It is probable that the Dartford warbler may in the future be recognized on other commons in the county, as Mr. Harting recorded its occurrence in Middlesex on Stanmore Common, which is only just outside Hertfordshire, as long ago as 1866. Mr. Worte considered that the birds seen by him were nesting.

20. Goldcrest. *Regulus cristatus*, K. L. Koch.

This pretty little bird is distributed all over the county, but being partial to fir-trees is not so common in Hertfordshire as in counties where such trees are more abundant.

21. Firecrest. *Regulus ignicapillus* (Brehm).

An example of this species was obtained at Tring on January 1st, 1887. There is also a statement in the *Transactions* that the firecrest had occurred at Bennington near Stevenage on the authority of Mr. Chapman of that place, who had often seen them there.

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Inasmuch as it is most difficult to identify this small bird unless it is shot, I think that perhaps the observer may have mistaken the male of the last species for this bird.

22. Chiffchaff. *Phylloscopus rufus* (Bechstein).

This is a bird which seems very irregularly distributed over the county, being common in some districts, but quite scarce in others. It arrives very often about March 21st, although, if the weather is very cold, it does not make itself heard. It appears to stay well on into September and even October, and its song may be sometimes heard at that time of the year.

23. Willow-Warbler. *Phylloscopus trochilus* (Linn.).

This is a very common summer visitor to all parts of the county, arriving early in April and remaining till September. This species may also be heard singing late in the year.

24. Wood-Warbler. *Phylloscopus sibilatrix* (Bechstein).

This is rather a local species in the county, but on the western side it is certainly plentiful. It has however a curious way of frequenting a wood one summer and being entirely absent from it the next. It is probable that it is commoner in Hertfordshire than is actually known at present, as it is a species that many persons are unacquainted with, no doubt on account of its habit of singing at the tops of the trees in the woods it frequents. On the other side of the county Mr. H. S. Rivers has identified it at Sawbridgeworth. Its usual time of arrival is about the end of April or beginning of May.

25. Reed-Warbler. *Acrocephalus streperus* (Vieillot).

This bird is rather local in Hertfordshire on account of the scarcity of suitable localities for it. It is however found in numbers at the Tring reservoirs. The reed-warbler usually arrives about April 20th.

26. Marsh-Warbler. *Acrocephalus palustris* (Bechstein).

A specimen of this bird is said to have been shot on one of the Tring reservoirs in August, 1883.

[Great Reed-Warbler. *Acrocephalus turdoides* (Meyer).

The record of this fine species in Hertfordshire is in my opinion due to some mistake. It rests upon the authority of Mr. More, who in his paper on the 'Distribution of British Birds,' which appeared in the *Ibis* for 1865, mentioned that the late Mr. F. Bond stated

that a nest of this bird had been obtained in Hertfordshire. I can find no further information in corroboration of this statement, which therefore always remains open to doubt.]

27. Sedge-Warbler. *Acrocephalus phragmitis* (Bechstein).

The sedge-warbler is found in many parts of the county chiefly in the neighbourhood of water, though not always so. It generally arrives about the middle of April.

28. Grasshopper-Warbler. *Locustella naevia* (Boddaert).

The grasshopper-lark, as it is sometimes called, is to be found on many of our commons in some numbers; in fact at Berkhamsted it can be considered plentiful. This bird when it first arrives is quite bold, sitting on the top of some bush and reeling out its curious song; but it soon becomes much more shy. Its usual time for arrival is about the last week in April.

29. Hedge-Sparrow. *Accentor modularis* (Linn.).

The hedge-sparrow is a common resident throughout the county. Mr. William Hill, jun., of Hitchin, in 1881 found a nest of this species containing eggs on January 1st. I do not think that this bird is very subject to variation in colour, but Mr. Spary of St. Albans informs me that he has one of a cinnamon colour, which was shot near that city in 1896.

30. Dipper. *Cinclus aquaticus*, Bechstein.

Hertfordshire does not unfortunately possess such streams as the dipper loves, but it has on two or three occasions condescended to visit us. In the *Zoologist* for 1849 Mr. Lucas mentions a dipper that was shot at Westmill on the river Orton near Hitchin in the winter of 1848. It was obtained in the mill-tail, and appeared to be a young male in good plumage. The late Mr. Littleboy also mentioned having seen this bird on two occasions about 1874 at Hunton Bridge.

31. Bearded Reedling. *Panurus biarmicus* (Linn.).

This beautiful bird has been recorded on three occasions in Hertfordshire. The first instance was mentioned by the Rev. James Williams in the *Zoologist* for 1849, where he stated that a pair of these birds, male and female, had been shot at the Tring reservoirs on December 21st, 1848. He only observed two at the time, which flew out of an alder bush into the reeds. A little earlier in the same year Mr. William Lucas of Hitchin saw a small flock of these birds on the banks of

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the little river Orton near that place; they were in a bed of reeds, but a pair allowed him to approach quite close and observe their movements. This record also appeared in the *Zoologist* for 1849. I am indebted to Mr. Miller Christy's book on the *Birds of Essex* for the third record, as he states in that book that on July 12th, 1888, Mr. Taylor of Bishops Stortford recognized a male bearded tit on the Hertfordshire side of the river Stort near that town. This bird therefore I think we can rightly claim.

32. Long-tailed Tit. *Acredula caudata* (Linn.).

This pretty little bird may be found commonly all over the county throughout the year, but is perhaps more conspicuous in the winter on account of its going about in family parties.

33. Great Tit. *Parus major*, Linn.

The great tit is a plentiful resident in Hertfordshire and builds its nest in a great variety of situations.

34. Coal-Tit. *Parus ater*, Linn.

Considering the number of these birds that one sees in the winter, I can only imagine that we have a large immigration at that period, as the birds which remain with us during the summer are not sufficient to account for those about later. A curious nesting-site chosen by this bird was a letter-box near Stanmore. In this case however the bird was unfortunately killed on the nest and the eggs broken by some mischievous boys.

35. Marsh-Tit. *Parus palustris*, Linn.

This is also a pretty plentiful species in Hertfordshire. One habit I have noticed about this bird is that it more often than any of the other tits pecks out a nesting-hole for itself in a decayed tree or post instead of taking possession of a ready-made home.

36. Blue Tit. *Parus cæruleus*, Linn.

This is another common species, which also varies very considerably the situations it chooses for its nest. Mrs. Brightwen informed the late Mr. Littleboy that a pair of these birds near Stanmore took possession of and held against all comers a cocoa-nut which had been hung up for the birds to feed off. The same lady also mentioned an instance of this species attacking bees at a hive, a habit which it was a matter of some difficulty to cure them of. Amongst other curious nesting-places of the blue tit that I have records of so far as Hertfordshire is concerned may be mentioned a pump, a letter-box and an old boot.

37. Nuthatch. *Sitta cæsia*, Wolf.

The nuthatch is certainly a very plentiful resident in all parts of Hertfordshire which are well timbered. Ashridge Park I may especially mention as a favourite place for them, and I have no doubt many of the other large parks in the county are the same.

38. Wren. *Troglodytes parvulus*, Koch.

This is a very common species, but it cannot, like the tree-creeper, be accused of shyness. It chooses all sorts of situations for its nest and does not seem to be affected by even the hardest weather.

39. Tree-Creeper. *Certhia familiaris*, Linn.

This bird is also pretty common, but on account of its shyness is no doubt less frequently seen than it otherwise would be.

40. Pied Wagtail. *Motacilla lugubris*, Temminck.

This species is plentifully distributed all over the county, staying all the year round when the weather is not too hard, but leaving us in severe winters and reappearing about the first or second week in March. I have on several occasions found a cuckoo's egg in the nest of this species in Hertfordshire.

41. White Wagtail. *Motacilla alba*, Linn.

It was not until 1895 that this species was actually recorded in Hertfordshire, although no doubt it had occurred here before. However, in that year Mr. H. S. Rivers called my attention to the fact that the bird was fairly plentiful round Sawbridgeworth during the spring, and later I saw several of them at Tring and Berkhamsted. In April of the same year Mr. Rivers examined a nest in his garden and found it contained twelve eggs; this nest appeared to belong to two pairs of birds—one being *M. alba* and the other *M. lugubris*. Later in the same year I saw a pair of these birds which, from their movements, certainly had a nest. Since then I have on several occasions clearly identified this species in the county.

42. Grey Wagtail. *Motacilla melanope*, Pallas.

This is a regular winter visitor, arriving usually in October and leaving again towards the end of March. It has however on one occasion been found nesting at the Tring reservoirs; the nest in question was placed on a bank of clay under an overhanging ledge, and was well concealed behind some grass. During the present year (1900) I saw this species at Berkhamsted on August 14th.

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43. Yellow Wagtail. *Motacilla raii* (Bonaparte).

This is a regular summer visitor to all parts of the county where the locality is suitable; it is especially fond of the neighbourhood of water. The date of its arrival is usually about the middle of April.

44. Tree-Pipit. *Anthus trivialis* (Linn.).

This species is to be found all over the county, arriving early in April.

45. Meadow-Pipit. *Anthus pratensis* (Linn.).

About the distribution in Hertfordshire of this species during the nesting season a great deal has yet to be learnt. At present I can only mention Royston, Ickleford, Oughton Head Common and Berkhamsted Common as localities in which it nests. In winter the meadow-pipit is commonly distributed all over the county, and I have actually seen it in very hard weather in Berkhamsted High Street.

46. Water-Pipit. *Anthus spipoletta* (Linn.).

On the authority of the Hon. W. Rothschild, who reported their occurrence to the late J. E. Littleboy, two of these birds are said to have been obtained at the watercress beds at Berkhamsted in 1886.

47. Golden Oriole. *Oriolus galbula*, Linn.

This county can be included among those in which the golden oriole has nested, as in 1881 a nest with three eggs was found at Charlic Farm, in the parish of Amwell near Ware, by Mr. H. Benningfield and his son in the month of June. It was built, curiously enough, high up in a hawthorn hedge, about ten feet from the ground. The eggs and nest were seen by the late J. E. Littleboy. On June 4th, 1886, a golden oriole was shot on the borders of Sherrards Wood, Digswell near Welwyn, and was mounted by Mr. Lloyd of St. Albans. The last authenticated record I have of this species in Hertfordshire is of a pair which visited the garden of Mr. Thorne of Broxbourne about the 20th of July, 1888, one of them nearly getting caught in a strawberry-net.

48. Great Grey Shrike. *Lanius excubitor*, Linn.

This species has occurred on a good many occasions in Hertfordshire, but unfortunately few of the records specify whether the bird obtained or seen had one or two wing spots, the number of spots being the means of ascertaining whether the bird was *L. excubitor* or *L. major*, the latter being the more northern race. The first note I have of this bird was in January, 1881, when two of them were

shot on Mr. Ginger's farm at Boxstead near Hemel Hempstead. These specimens were examined by the late J. E. Littleboy, and were then in the possession of Mr. Bowers of Hemel Hempstead. In November, 1882, a bird of this species was obtained near Throcking by a Mr. Coleman. It was mounted by the late William Norman of Royston, and eventually passed into the hands of the Rev. C. W. Harvey of Throcking. Another was shot about the same time by Mr. Gibbs's keeper at Elstree. Mr. R. W. Brett mentioned that a great grey shrike was shot on December 16th, 1883, in the neighbourhood of Hertford; while on the 26th of the same month Mr. Marlborough R. Pryor saw one near Weston Manor flying with a shrew mouse in its claws. In 1884 a specimen was obtained on Tyler's Farm near Bushey, on September 23rd, and was mounted by Mr. Bowers. In the following year a specimen was shot in Ware Park by the head keeper on March 16th. In January, 1886, Mr. Sutton shot a male at Hill Farm, Northchurch; this bird, which is now mounted in his possession, when shot was sitting on a tree from which it fell into the snow, where it could not be found for some time.

The only time this bird has occurred in the summer in this county was in July, 1887, when Mr. Pryor saw one at least a dozen times in the parish of Willian near Stevenage, occasionally getting as near to it as half a dozen yards. Mr. William Hill, jun., of Hitchin, informed the late Mr. Littleboy that a great grey shrike was captured by a professional birdcatcher to the west of Hitchin at the end of November or early in December, 1887; it attacked the call-bird which was pegged to the ground, and the man pulled his net over it: he then put it into a cage with a hedge-sparrow, which it immediately attacked and killed. After careful identification it was released, apparently none the worse for its experience, although during its short captivity it was most pugnacious. The Hon. Walter Rothschild states that a great grey shrike was seen at Tring in October, 1888. Mr. H. S. Rivers shot a young male on Roderick's Farm near Latton Mill on December 5th, 1890, and saw another near the same place on December 27th, 1898; this latter he watched for some time. Mr. Charles H. Emson, in a letter to the *Field*, mentioned that he saw a fine male grey shrike on Berkhamsted Common on February 18th, 1900; this bird he watched for some time. On April 7th following I also saw a grey shrike (probably the same as that seen by Mr. Emson) on Berkhamsted Common, and watched it

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through my field-glasses for some time, satisfying myself that it had two wing spots, therefore being *L. excubitor*. The flight of this bird was very like that of the red-backed species; the tail seemed very long, and the black and white wings and tail appeared very conspicuous when flying. The bird generally sat on the top of a thornbush with its body bent very much forward. Mr. Latchmore of Hitchin informs me that he has in his possession an example of this species which was shot on Norton Common near Baldock.

49. Red-backed Shrike. *Lanius collurio*, Linn.

This is a regular summer visitor to Hertfordshire, arriving about the middle of May, and so far as the Berkhamsted district is concerned, is decidedly on the increase.

50. Woodchat Shrike. *Lanius pomeranus*, Sparrman.

This shrike has occurred in Hertfordshire on two occasions, both of which are mentioned by Mr. O. V. Aplin in his paper on the occurrence of this species in the British Isles in the *Zoologist* for 1892. In 1856 Mr. Tuck reported in the *Zoologist* that a woodchat had been shot near Baldock in the spring, and had been mounted by Mr. Norman of Royston; while in May, 1873, the Rev. H. A. Macpherson saw one near Hertford, and recorded it in the *Transactions of the Cumberland and Westmorland Association*.

51. Waxwing. *Ampelis garrulus*, Linn.

The first Hertfordshire specimen of the waxwing was shot about a mile from Tring on the Aylesbury road, about 1851. In January, 1870, Mr. How shot one at Cupid's Green near Hemel Hempstead, and the bird is, I believe, still in his possession. The late Dr. Brett mentioned that one was shot in the Watford Fields in 1874. Two were shot near Ware in 1881, and are in the possession of Mr. Chapman of Bennington; while the Hon. Walter Rothschild informed Mr. Littleboy that a waxwing was obtained at Tring in March, 1883. In 1893 a specimen was picked up on the banks of the river Lea near Hertford, in January; and on February 27th two were shot from a party of five which were feeding on the fruit of the wild rose at Northaw. In the autumn of 1895 two of these birds were shot at Radlett by Mr. Clarke the station-master, in whose possession they now are.

52. Pied Flycatcher. *Muscicapa atricapilla*, Linn.

This species can unfortunately only be included in the Hertfordshire list as an occa-

sional visitor. It has been recorded on about seven occasions. In 1879 one was shot near Royston during the summer; it was stuffed by the late William Norman, and remained in his collection till his death, when the collection was, I believe, sold; where this particular specimen went to I do not know. It was not until 1887 that this bird was again recorded in the county; in that year one was shot near Stevenage on May 13th. In 1896 an example was obtained at Hitchin, but was so badly damaged that it could not be preserved; it was, however, carefully identified before being thrown away. In the following year I saw a fine male near Great Gaddesden on April 23rd, and spent some time in watching it. I was first struck by the white on the bird, which was in splendid plumage. Its movements were very similar to those of the spotted flycatcher, and its note was somewhat like the call-note of a tree-pipit (*A. trivialis*). On April 24th, 1898, and the two following days, the Hon. A. Holland-Hibbert saw a male in his garden at Munden near Watford, and had many opportunities of watching it. In the present year he again saw a male bird at Munden; this was on April 8th, which seems an exceptionally early date for the species. In the *Trans. Herts Nat. Hist. Soc.* 1893, vol. vii., there is mention made of an example of this species, which was included in the list of Hertfordshire Quadrupeds, Birds and Insects which had been preserved by a Mrs. Young of Bennington.

53. Spotted Flycatcher. *Muscicapa grisola*, Linn.

This is an annual visitor, and may be found nesting all over the county. It usually arrives about the beginning of May, but has been seen at times about a week earlier.

54. Swallow. *Hirundo rustica*, Linn.

This is a regular summer visitor to Hertfordshire, arriving usually about the first or second week in April, and leaving us in September or early in October. This is one of the nests in which the cuckoo's egg has been found in the county.

55. House-Martin. *Chelidon urbica* (Linn.).

The house-martin is also a summer visitor, which comes here usually rather later than the last species, but which leaves about the same time.

56. Sand-Martin. *Cotile riparia* (Linn.)

This species is usually the first of the *Hirundinidæ* to arrive, often making its appearance at the end of March.

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57. Greenfinch. *Ligurinus chloris* (Linn.).

This is a common resident throughout the county. Varieties of this bird have been obtained. One shot at Chapmore End near Hertford in September, 1882, was of a creamy white colour; its wings were mostly yellow, and its eyes were pink. Another, which was caught near St. Albans in December, 1884, was of a creamy colour, nearly approaching white.

58. Hawfinch. *Coccothraustes vulgaris*, Pallas.

This is a bird which some few years back was looked upon as a rarity. Whether it was really rare or whether it was not well known then I do not know, but I can safely put it down as plentiful, at any rate in West Herts, at the present time. Seldom do I go out in the neighbourhood of Berkhamsted without seeing or hearing some of these birds; while in the spring of 1895 I had the pleasure of seeing a flock of fifty or more of them. From other parts of the county also I have reports of its occurrence.

59. Goldfinch. *Carduelis elegans*, Stephens.

About this bird opinion seems to differ as to whether it is on the decrease or otherwise in Hertfordshire. No doubt a great many of them are taken by birdcatchers, but in spite of that the goldfinch is by no means uncommon in many districts.

60. Siskin. *Carduelis spinus* (Linn.).

The siskin is an irregular winter visitor to many parts of the county, but nowhere does it appear in any great numbers. It is frequently accompanied by the lesser redpoll (*L. rufescens*).

61. House-Sparrow. *Passer domesticus* (Linn.).

This species is to be found everywhere throughout the county. Several albino varieties have been obtained.

62. Tree-Sparrow. *Passer montanus* (Linn.).

The tree-sparrow is far from common in many parts of Hertfordshire, though in others it is more plentiful. Its numbers, however, cannot of course compare with the last-mentioned species.

63. Chaffinch. *Fringilla cœlebs*, Linn.

This is a common resident. In 1893 the late William Norman received for preservation a hen chaffinch with a mixture of white and grey and sparrow-like markings. Mr. Thrale also had a chaffinch in his possession which had a white head. In 1884 a chaffinches' nest was found with eggs, on which the bird was sitting, on January 30th;

the nest was built in a piece of cottager's kale in the garden of Mr. Ricardo Palmer at Bushey.

64. Brambling. *Fringilla montifringilla*, Linn.

In some years this bird has visited the county in immense flocks, while in others few, if any, bramblings appear. In March, 1895, I saw countless numbers feeding on the beech-nuts under the trees in Ashridge Park. Many of these had nearly assumed breeding plumage. Amongst them I saw one with a white head. In December, 1897, I again saw thousands of these birds passing in a southerly direction over Berkhamsted. The latest date on which I have seen this species was on April 6th, 1895, near Pendley Manor, Tring.

65. Linnet. *Linota cannabina* (Linn.).

This is a common resident in most parts of Hertfordshire, though Mr. Joseph Nunn informs me that during the last few years it has become much scarcer in the Royston district than it was formerly. Mr. E. S. Fordham in 1883 found two or three linnets' nests placed in brussels sprouts that had run to seed, a rather unusual nesting-place for this bird to choose.

66. Mealy Redpoll. *Linota linaria* (Linn.).

Mr. Sainsbury Verey caught a pair of these birds near St. Albans in 1861, while in 1866 a pair were obtained near Elstree. The only other record I can find of this species in Hertfordshire is of one which was taken by Mr. Banfield on the borders of the county towards Ivinghoe in September, 1883.

67. Lesser Redpoll. *Linota rufescens* (Vieillot).

This species is a frequent visitor to the county during the winter, often appearing in some numbers. There are however few recorded instances of its nesting with us, although probably it does so oftener than is known. I can only mention four places where its nest has been found—St. Albans, Newsells Park (Barkway) and Sawbridgeworth, and I have seen an egg of this species which was taken on Berkhamsted Common within the last three years.

68. Twite. *Linota flavirostris* (Linn.).

In December, 1883, a pair, and in February, 1884, two pairs of twites were caught in the neighbourhood of Aldbury by birdcatchers; while on May 4th in the latter year a male was taken in the neighbourhood of Hitchin.

69. Bullfinch. *Pyrrhula europæa*, Vieillot.

This bird is plentiful in most parts of the county, although it is rather shot down in

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those districts where fruit is cultivated to any extent.

70. Crossbill. *Loxia curvirostra*, Linn.

This species is a pretty frequent visitor to several places in Hertfordshire, more especially on the north-western border. At Tring Park and in the neighbourhood of Berkhamsted it appears every winter, staying at times well into the summer. In fact there are good grounds for believing that it has nested at both places, although the actual nest has never been discovered, the Hon. W. Rothschild having seen a young bird at the former place in June which could barely fly, while near Berkhamsted I have seen the birds paired in March and April during two different years. Yarrell also mentions Hertfordshire as a county in which the nest has been found.

71. Two-barred Crossbill. *Loxia bifasciata* (Brehm).

The only example of this species which has been obtained in Hertfordshire was shot in a little larch wood on Tharbies Farm near Sawbridgeworth on January 11th, 1890. It was in the plumage of a female, but the sex was unfortunately not ascertained by dissection. Mr. H. S. Rivers, who shot it, first recorded it in the *Zoologist* for 1893 as *L. leucoptera*; but Mr. E. Hartert had an opportunity of examining it, and came to the conclusion that it belonged to the European species.

72. Corn-Bunting. *Emberiza miliaria*, Linn.

This species is a common resident, especially in the more open parts of the county.

73. Yellow Hammer. *Emberiza citrinella*, Linn.

This is also a common resident, whose numbers are however increased by immigrants during the winter.

74. Cirl Bunting. *Emberiza cirlus*, Linn.

This is rather a rare nesting species with us, although I think it must be sparsely distributed along the hills to the north of the county. In 1881 one was shot near Royston on February 14th while in company with some yellow hammers. The neighbourhood of Tring seems to be favoured by it most, and even there it is far from common. My acquaintance with it in Hertfordshire is decidedly limited, being confined to two examples—one seen at Hastoe near Tring on August 21st, 1898; while during the present year I saw a male at Aldbury on several occasions which probably had a nest near.

75. Rustic Bunting. *Emberiza rustica*, Pallas.

The late Lord Lilford had in his collection a young male of this species which was sent to him in the flesh, having been taken by a birdcatcher at Elstree reservoir on November 19th, 1882. This specimen was only the third that had been obtained in the British Isles.

76. Reed-Bunting. *Emberiza schoeniclus*, Linn.

The reed-bunting is fairly plentiful at Tring and other suitable localities. It is however inclined to be rather local.

77. Snow-Bunting. *Plectrophenax nivalis* (Linn.).

This bird has occurred on several occasions in the winter. The first record I have of it was in February, 1881, when a specimen which passed into the hands of Mr. W. Hill was shot near Hitchin. About the same time several were seen near Royston, two of which were caught with some larks. On January 24th, 1883, one was obtained on Harpenden Common; while on December 27th, 1886, and again on the 29th, a flock was seen at Marlowes, Hemel Hempstead. On December 6th, 1893, a specimen was picked up under the telegraph wires on Royston Heath, and in January following one was shot at Sandon.

78. Starling. *Sturnus vulgaris*, Linn.

This is a common resident, the numbers of which are greatly increased by migrants during part of the year. In the autumn it may be seen in vast flocks wending its way to and from some common roosting-place. During the last two years I have seen a starling at Berkhamsted which had a white tail, but which was otherwise of a normal colour.

79. Chough. *Pyrrhocorax graculus* (Linn.).

It is the unexpected which always happens; such is certainly the case in this species being seen in Hertfordshire. In the *Herts Advertiser* for June 21st, 1884, appeared a letter from a Mr. Henry Cross of Harpenden, in which he gave a description of a bird of this kind which he had seen on the eastern side of the Midland Railway near Beech Bottom Wood, St. Albans, on May 27th previous. Much correspondence appeared in the papers about it, but no evidence was forthcoming that a chough had escaped from confinement at that time, although that would seem to be the most likely solution of such an occurrence.

80. Jay. *Garrulus glandarius* (Linn.).

The jay is a plentiful species in the wooded districts of the county, although it is pretty

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well kept down where game preserving is carried on to any extent. In 1882 there appears to have been an unusually large immigration of this bird into the county.

81. Magpie. *Pica rustica* (Scopoli).

This bird is unfortunately in most parts of Hertfordshire a thing of the past, and it is only in those districts where there is little or no game preserving that one is likely to find this handsome species still resident.

82. Jackdaw. *Corvus monedula*, Linn.

The jackdaw is so common in some parts of the county as to be a positive nuisance on account of its depredations. This bird prefers parks with old trees and church towers for its nesting haunts, though I think sometimes it must condescend to take possession of old rooks' nests, as I have seen them round a rookery where there could be no other nesting-place for them. Mr. Arthur Lewis informed the late Mr. Littleboy that he observed a milk-white jackdaw in Gorhambury Park. This bird I believe remained there some years.

83. Raven. *Corvus corax*, Linn.

This bird is unfortunately one of those that is quite a thing of the past so far as Hertfordshire is concerned. Formerly it no doubt was a fairly plentiful breeding species in the county, but it has now completely vanished. At present I am only able to mention two places where it formerly nested, although there are probably several others. The first one is mentioned in the catalogue of the Booth Museum at Brighton, the late E. T. Booth having been shown a tree in Bocket Hall Park by Mr. Norman Thrale, in which a pair of ravens had nested up to 1846. Mr. Thrale himself had two specimens of the bird in his collection, which had been obtained there. With regard to the other nesting-place, which was at Beechwood Park, I have only the statement of a man who was formerly on the Woburn estate, and who heard a former Duke of Bedford, speaking in reference to the raven's nest then existing at Woburn, state that the nearest nest to his knowledge was at Beechwood. Of late years this bird has occasionally visited the county, six occurrences being recorded in the *Transactions* since 1880. In 1881 a raven was seen on the outskirts of Mimms Wood on February 25th by Miss Selby and several gentlemen while out hunting. The next record is one seen in 1884 near Royston by Mr. Percy F. Fordham, and two more were seen at Church Hill Farm near that place on November 19th, 1885. In 1890 a raven is reported to have been shot in Hertfordshire in January, and in October,

1894, one was knocked off a tree with a stone by a boy at Tring; while on December 26th a dead bird was picked up at the same place. With regard to the bird knocked down by the boy, it would seem curious that the raven, which is usually so wary should allow itself to be so easily approached, unless it was an escaped bird; but Mr. Hartert, who reported the occurrence, stated that he could see no signs of captivity about it. In addition to the above examples there is at Munden in the small collection of local birds belonging to the Hon. A. Holland-Hibbert a bird which was obtained in the neighbourhood, probably between 1840 and 1850.

84. Carrion-Crow. *Corvus corone*, Linn.

This is a species which is sadly on the decrease in Hertfordshire, and is hardly to be found in any part of the county during the nesting season, except along the southern border, where there is much less game preserving. In other districts it is only usually seen as a wanderer. At Munden there is a stuffed bird of this species of a creamy-white colour with black tips to the wings which was shot in that neighbourhood some years ago.

85. Grey or Hooded Crow. *Corvus cornix*, Linn.

This bird is a regular winter visitor to the county, arriving in October and leaving again in March. Large numbers appear at Ashridge after there has been a shooting party there. One of the names of this bird is the Royston crow, which is probably taken from the town of that name, which was formerly in Cambridgeshire, but is now in this county.

86. Rook. *Corvus frugilegus*, Linn.

This species is plentiful all over the county. Lord Verulam informed Mr. Lewis in 1884 that there were in Gorhambury Park several more or less white rooks, including one quite white. A black and white rook also was shot at Watford by Mr. Michael Ryder in 1893. Mr. Silvester informed me that in March, 1896, his ploughman saw some rooks attack three jackdaws, two of which they killed.

87. Sky-Lark. *Alauda arvensis*, Linn.

This is a common resident, whose numbers are at times greatly increased by immigration. Albino and colour varieties of this species have on several occasions been obtained in the county.

88. Wood-Lark. *Alauda arborea*, Linn.

During the month of March, 1878, and again in 1879, this species was observed in a

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field close to Symond's Hyde Wood in the parish of Sandridge by Mr. A. F. Griffith, who had no doubt that it nested there.

89. Short-toed Lark. *Alauda brachydactyla*, Leisler.

On March 9th, 1886, the Hon. Walter Rothschild obtained a bird of this species in Tring Park while shooting food for a tame owl, and the bird is I believe now in the Tring Museum.

90. Swift. *Cypselus apus* (Linn.).

This is a common summer visitor, which arrives about the beginning of May and leaves usually early in August.

91. Nightjar. *Caprimulgus europæus*, Linn.

This bird is fairly plentiful throughout the county wherever suitable localities are to be found, and arrives towards the middle of May. It has a curious habit when put up of flapping its wings together, much after the style, though on a smaller scale, of the wood-pigeon (*Columba palumbus*).

92. Wryneck. *Ijnx torquilla*, Linn.

This species is a regular summer visitor, arriving early in April.

93. Green Woodpecker. *Gecinus viridis* (Linn.).

This is a fairly plentiful resident throughout the county.

94. Great Spotted Woodpecker. *Dendrocopus major* (Linn.).

This is a bird which may be described as not uncommon in Hertfordshire; in fact on the western side of the county it is plentiful.

95. Lesser Spotted Woodpecker. *Dendrocopus minor* (Linn.).

This bird is hardly as common as the last-mentioned species, and on account of its shyness is far less often seen. At the same time it cannot be called uncommon in Hertfordshire.

96. Kingfisher. *Alcedo ispida*, Linn.

This beautiful bird is to be found in most parts of the county, though in some districts it undergoes much persecution from bird-catchers, who put up silk nets under the bridges, and then frighten the birds towards them.

97. Roller. *Coracias garrulus*, Linn.

The Rev. C. A. Johns in his book *British Birds in their Haunts* states that a roller was obtained on September 20th, 1852, close to his garden. He was then residing at Callipers, Chipperfield Common. This is the only existing record of this species in Hertfordshire.

98. Hoopoe. *Upupa epops*, Linn.

This handsome bird has been recorded in our county on two occasions only. In May, 1882, an example in fine plumage was shot by a keeper named Gooch at Bocket Hall in the parish of Welwyn. The other bird had a happier time so far as Hertfordshire was concerned, although I am afraid it came to a bad end over the borders. It was seen in April, 1882, by Mr. Joseph Procter near the Hoo, Great Gaddesden, but did not remain long in the neighbourhood, and the fact that a hoopoe was killed near Wendover a few days later rather points to an unfortunate ending for this bird also.

99. Cuckoo. *Cuculus canorus*, Linn.

This is a common summer visitor, arriving about the second or third week in April. The following is the list of nests in which this bird's egg has been found in Hertfordshire: stonechat, hedge-sparrow, pied wagtail, reed-warbler, whitethroat, swallow and meadow-pit.

100. White or Barn Owl. *Strix flammea*, Linn.

This is a fairly plentiful species. Unfortunately it is a favourite bird to have stuffed, and this fact, in addition to the persecution it undergoes from keepers, does a great deal to prevent it from becoming commoner.

101. Long-eared Owl. *Asio otus* (Linn.).

The long-eared owl is rather locally distributed in Hertfordshire, although where it does occur it is by no means rare. As it is partial to fir plantations there are not many districts in the county where it is likely to be common, but it is to be found in many of the fir spinneys on the northern border, especially in the neighbourhood of Hitchin.

102. Short-eared Owl. *Asio accipitrinus* (Pallas).

This bird is only a winter visitor, appearing some years in considerable numbers, though generally rather locally. It is often flushed out of turnips and rough grass in October and November.

103. Tawny Owl. *Syrnium aluco* (Linn.).

This owl is no doubt plentiful in parts of the county where there are old trees, but like its white relative it suffers considerable persecution. It is a bird which seems much inclined to make attacks on people who are passing near its nest, and one or two instances are on record of this happening in Hertfordshire. In 1899 Mr. H. G. Fordham sent me a specimen which had been killed by flying against the telegraph wires near Odsey. This

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I should imagine is rather an unusual occurrence in the owl family.

104. Little Owl. *Athene noctua* (Scopoli).

This is a species which should I think, so far as this county is concerned, be classed under the heading 'introduced.' The first recorded specimen in Hertfordshire was obtained near Ashwell in May, 1877. This example passed through the hands of the late William Norman of Royston. Some years after that I believe the Hon. W. Rothschild turned out a lot of these birds at Tring, where some of them still nest. In 1897 a pair, which reared two young ones, nested on one of Mr. T. Fowell Buxton's farms at Easneye near Ware, the nest being in a hollow tree, and in the following year they nested again on this farm but in the loft of a barn. I am sorry to say that the birds on the last occasion were disturbed and deserted their eggs, one of which was presented by Mr. Buxton to the County Museum at St. Albans. In addition to the above records I am informed by Mr. Sainsbury Verey that in 1898 a little owl was shot in the early part of the year at Bull's Land near Rickmansworth, while later in the same year another was obtained at West Hyde in the same district. The head keeper at Moor Park also told me that in that year he saw a small owl, about the size of a blackbird, there on several occasions. This bird probably belonged to the species now under consideration. From the above facts it would seem probable that the little owl is likely to become a permanent resident in Hertfordshire.

105. Hen-Harrier. *Circus cyaneus* (Linn.).

The first record I have of this species is in 1845, when a pair were shot in the parish of Sandon; these birds passed into the possession of the late Mr. Henry Fordham. On October 28th, 1883, and on one or two occasions about that date, Mr. M. R. Pryor saw a bird, which he is confident was of this species, at Weston Manor near Stevenage. A hen-harrier, which is now in the possession of Sir V. H. Crewe, of Calke Abbey, Derbyshire, was obtained many years ago at Tring, while a female was shot there in December, 1884. On November 7th, 1897, Mrs. Brightwen's bailiff saw at Elstree reservoir a bird which he stated belonged to this species; it remained in the neighbourhood for some days.

106. Montagu's Harrier. *Circus cineraceus* (Montagu).

This hawk has only been recorded in Hertfordshire on one occasion, Captain Young having obtained one at Hexton near Hitchin in 1875.

107. Buzzard. *Buteo vulgaris*, Leach.

This fine species is, I am sorry to say, only an occasional visitor to the county, although in former times it was probably a fairly common resident. Nowadays it usually comes to an untimely end. At Munden House there is a buzzard in the collection of the Hon. A. Holland-Hibbert, which was shot there between 1840 and 1850. This may have been a representative of the buzzards which were no doubt at one time to be found in Bricket Wood. In 1877 a bird of this species was obtained at Russell Farm near Watford, while in 1879 one was shot in Hatfield Park. In February, 1881, Mr. H. Cox procured an example at Harpenden, and in the following October a buzzard was seen near Royston, which, on being fired at, dropped a rabbit it was carrying. On the 15th of the same month one was shot at Royston while in pursuit of a pigeon; this specimen measured $39\frac{1}{2}$ inches across the wings and $19\frac{1}{2}$ inches in length. In the county museum there is a bird which was caught in a hedgehog trap at Cowheath Wood near Hoddesdon, and which was presented to the museum by Mr. F. M. Campbell. In September or October, 1897, a buzzard was shot at Barrington, while in the latter month one was seen flying over Earl's Wood, Barkway, where also on October 7th, 1898, and October 14th, 1899, and again in the early part of October, 1900, this species was observed.

108. Rough-legged Buzzard. *Buteo lagopus* (Gmelin).

This bird was first recorded in Hertfordshire in 1880, when one, which frequented a high hill with a large tree on the top during the greater part of October and part of November, was shot at Bennington on the ninth of the latter month. This bird measured 4 feet $7\frac{1}{2}$ inches across the wings and 1 foot 9 inches in length. A second specimen was shot on October 30th, 1883, within a few yards of where the other was killed. On January 3rd, 1881, Mr. T. F. Buxton, while out shooting on the Rye Meads near Ware, put up a bird of this species from the ground where it had apparently been feeding, as the remains of some bird were found near. A rough-legged buzzard, which was eventually exhibited by the late Lord Ebury at a meeting of the Herts Natural History Society in February, 1892, was trapped early in that month at Bishop's Wood near Rickmansworth, while in the following autumn a male and female were shot at Tring, and a third was taken alive, the latter living for some time in the Hon. Walter Rothschild's aviary.

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109. White-tailed Eagle. *Haliaetus albicilla* (Linn.).

The late Mr. Abel Smith had in his possession a specimen of this fine bird, which was obtained some years previously to 1877 at Sacombe.

110. Sparrow-Hawk. *Accipiter nisus* (Linn.).

This is probably the worst offender against the game laws, and deserves all it gets; but at the same time it is always a pity that any indigenous species should be gradually exterminated, as this seems likely to be. In many districts in this county it is now a most unusual thing to see a sparrow-hawk.

111. Kite. *Mikvus ictinus*, Savigny.

The red kite was no doubt at one time resident in Hertfordshire, but it has now so completely vanished that I am only able to mention one county specimen. This is in the collection at Munden, and was shot in that neighbourhood between 1840 and 1850.

112. Honey-Buzzard. *Pernis apivorus* (Linn.).

There is also at Munden an example of this species which was obtained near there about the same time as the kite above referred to. In 1881 a honey-buzzard was shot at Little Hadham on September 23rd while being mobbed by some rooks. It measured 53½ inches from tip to tip of its wings. On the 29th of the same month another was killed at Westmill Rectory, near Buntingford.

113. Peregrine Falcon. *Falco peregrinus*, Tunstall.

As no doubt the sport of falconry will be dealt with elsewhere in the present work, I propose only to treat of this grand bird from a natural history point of view. At the present time the peregrine, which is essentially sporting in its instincts, in most cases meets with an inhospitable reception and finds its way into the taxidermist's hands. In the last twenty-five years it has been recorded in Hertfordshire on some fifteen occasions, but only in about four instances does it appear to have escaped destruction. In 1876 one was shot at Hexton, while in 1878 a pair were killed at Newnham near Baldock, where also a female, which measured 43 inches across the wings and weighed 4 lb., was killed on September 30th, 1897. In 1891 a male in fine plumage was obtained at Stoney Hills near Bengoe on September 18th, while another was shot at Bramfield near Hertford on November 23rd. A female, originally reported as a buzzard, was taken at the end of December, 1891, at Cole Green, and on

March 16th, 1895, I saw a bird of this species, which from its size was presumably a female, stoop at a partridge at Pendley Manor near Tring. In August, 1891, a male was shot at Croxley Green, while Mr. Sutton of Northchurch has a fine example in his possession, which was killed by a boy while attacking Mr. Sutton's fowls on August 6th, 1896. In the following year a peregrine was seen near Royston during the autumn, while one, which remained some days, was first observed near Elstree on December 16th. In 1899 a falcon was seen at Cokenach near Royston about the beginning of May. In addition to the above occurrences there are some few others of which full details are not forthcoming, Mr. Franklin of Sandridge owning one, which was obtained near there, while another was killed by a keeper named Pangbourne at Marshall's Wick, St. Albans. The late Norman Thrale also had two in his possession which were shot in Hertfordshire.

114. Hobby. *Falco subbuteo*, Linn.

I am afraid that this little falcon is practically extinct as a breeding species in this county; in fact with one exception I am unable to enumerate any very recent occurrences of the bird. That it used formerly to nest frequently with us is certain, as Mr. Joseph Nunn of Royston informed me that in the early forties it was comparatively common in the neighbourhood of Kelshall in the north of the county; in 1849, however, the last specimen obtained in that parish was shot off the nest by a keeper. In 1879 a hobby was obtained in Hatfield Park, while in 1881 a nest containing four eggs was found in Moor Park. Mr. Latchmore of Hitchin also informed me that he had eggs which were taken some years ago near Stevenage. Mr. Norman Thrale mounted one of these birds which was shot near Portvale on September 17th, 1885, while Mr. F. M. Campbell owns one that was killed to the north of Cowheath Wood near Hoddesdon on July 3rd, 1887. The last record I have of this bird is rather a doubtful one: this was a hawk seen by myself on July 27th, 1899, which from its appearance and flight I am nearly positive was of this species, but of which I could not be absolutely sure on account of the light.

115. Merlin. *Falco aesalon*, Tunstall.

This species has only occurred in Hertfordshire about half a dozen times. I am informed by Mr. Latchmore that it has been obtained near Hitchin, and this is confirmed by Mr. J. H. Tuke. At Tring four specimens have been taken, two birds in immature plumage

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having been shot there in February, 1886, while two adults were procured in January, 1887. The only other record I have is of one seen at Elstree in December, 1896.

116. Kestrel. *Falco tinnunculus*, Linn.

This small hawk is, I am sorry to say, being gradually exterminated in many parts of the county, though it is still common in the more open districts. There is really very little excuse for this, as although it does take young game birds, the amount of mice and other small vermin it destroys quite counterbalances any damage it does. Unless some steps are taken by landowners generally to stop their keepers killing this bird, I am afraid it also will become a thing of the past.

117. Osprey. *Pandion haliaetus* (Linn).

Hertfordshire can boast of several fine pieces of water, some of which have been visited by this bird. The reservoirs at Tring have been favoured on two occasions, the first being in September, 1864, when a pair stayed there for some days: eventually on the 30th the female was shot, the male happily escaping. In September, 1886, two more visited the reservoirs. In the same month in 1880 a female was procured in Hatfield Park; it obtained its food from the river Lea, and was in the neighbourhood some days before it was shot. It measured 5 feet 6 inches across the wings and 2 feet in length, and was in splendid plumage. Another specimen was killed in the parish of Great Gaddesden on September 17th, 1887. It was fired at but only winged, and was with great difficulty captured and taken to the late J. E. Littleboy for identification. It was kept alive for some six weeks, being fed on live fish, but refusing to take them when dead. It eventually died and was preserved. This bird measured 5 feet 2 inches across the wings. On the following day a male was observed fishing at Wheathampstead in the river Lea. This also was shot and preserved.

118. Cormorant. *Phalacrocorax carbo* (Linn.).

In November, 1878, a cormorant was shot on the Tring reservoirs, where others were seen in October, 1880, and on October 31st, 1895. A young bird was picked up dead near Royston on October 15th, 1881, while on September 5th, 1885, a cormorant was seen near Watford. In March, 1886, another was shot near Park Street, St. Albans, and on November 4th, 1899, Mr. M. R. Pryor, while covert shooting near Stevenage, saw three cormorants fly over. On December 31st, or the following day, another went over him within gunshot.

119. Gannet. *Sula bassana* (Linn).

Mr. Archer of Sandridge had a bird of this species which was captured alive near that place in August, 1884. The second Hertfordshire specimen was picked up also alive on September 29th, 1885, near Brocket Hall, Welwyn. This was a young bird. Mr. M. R. Pryor also picked up a gannet alive near Weston some years ago. It was kept by him for about a week, and is now in the possession of Mr. W. A. Farr.

120. Common Heron. *Ardea cinerea*, Linn.

This species has so far as my knowledge goes no regular nesting-place in the county, although isolated nests have from time to time been found. In 1881 a pair nested near the Broadwater in Hatfield Park. It occurs of course in most parts of the county while in search of food, but these birds must come from heronries outside our borders.

121. Little Bittern. *Ardetta minuta* (Linn.).

The first record of this bird with us occurs in Mr. Harting's book on the *Birds of Middlesex*, in which he states that a specimen was obtained at Elstree reservoir in 1840. This bird became the property of the late F. Bond, and was no doubt sold with the rest of his collection on his death, but where it is now I do not know. The second Hertfordshire example was one shot on October 17th, 1884, by Mr. E. N. Beningfield, near the Carthage Weir on the river Lea near Broxbourne. This bird was mounted by Gunn of Norwich.

122. Bittern. *Botaurus stellaris* (Linn.).

Hertfordshire has few attractions to offer to this species, which probably accounts for the fact that it has not often been recorded in the county. It has however nested here on one occasion, a nest with four eggs having been found at one of the Tring reservoirs by the Rev. James Williams in July, 1849. One of these eggs is now in the possession of Professor Newton. The next record I can find is of an example now in the possession of Mr. Griffin, taxidermist, of Rickmansworth, which was obtained near there about 1865. Mr. A. H. Smith informed the late J. E. Littleboy that a bittern was shot near Stapleford on January 3rd, 1871, while Sir John Evans mentioned one procured near Boxmoor some years prior to 1877. On January 24th, 1881, a bittern in fine plumage, which measured 26 inches in height to the top of the head and 15 inches to the shoulder, was shot at Hoddesdon, where another was obtained during the severe winter of 1890-91. Two bitterns, which probably went into the Tring collection, were taken at Tring on November

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9th, 1884, while another was obtained there in December, 1894. In the latter year one was heard near Hitchin, and a specimen was obtained at Orton near that place in February, 1885. This bird is now in the possession of Mr. William Hill.

123. Glossy Ibis. *Plegadis falcinellus* (Linn.).

This rare visitor has been obtained on two occasions, one having been shot on September 10th, 1881, at Balls Park, Hertford, by Mr. P. Ralli, while the other was obtained in November, 1887, about 200 yards from the village of Waterford, also near Hertford, by a Mr. J. Roberts. This latter bird was stuffed by Mr. Shrimpton of Hertford, and is now in the possession of the Hon. Walter Rothschild.

124. Grey Lag-Goose. *Anser cinereus*, Meyer.

The only record of this species is of a bird which was obtained at the Tring reservoirs in September, 1886, and was reported to Mr. Littleboy by the Hon. Walter Rothschild.

125. White-fronted Goose. *Anser albifrons* (Scopoli).

Captain Clarke-Kennedy in his interesting little book on the *Birds of Berks and Bucks* states, on the authority of the Rev. H. H. Crewe, who was at that time the rector of Drayton Beauchamp, close to the Tring reservoirs, that this species had occurred there, but he gives no further details. This is the only ground I have for including the white-fronted goose in this list.

126. Bean-Goose. *Anser segetum* (Gmelin).

This bird has only been actually identified on two occasions, although it is probable that it has often occurred amongst the many geese which have been seen flying over at various times. The first of the two records is of a specimen shot out of a flock of fifteen near Royston, on January 15th, 1881. The other was obtained by the Hon. A. Holland-Hibbert at Munden, in the winter of 1890-91, and is now in his possession.

[Canada Goose. *Bernicla canadensis*, Fleming.

This species, which is really 'introduced,' is gradually spreading all over the country, and will no doubt in time be as much entitled to be called a British bird as *Caccabis rufa* and several other species. It has only occurred in this county on one occasion, when an example was obtained from a flock of about ten which were observed early in the morning in a field at Cokenach near Royston. It weighed 12 lb., and measured 5 feet 6 inches across the wings and 3 feet 3 inches in length.]

127. Whooper. *Cygnus musicus*, Bechstein.

Although Captain Clarke-Kennedy stated that this species was formerly an occasional visitor to the reservoirs at Tring, it has certainly not occurred there of recent years. In the winter of 1875-76 a pair of these birds frequented the river Gade at Water End, Great Gaddesden, for some days. About Christmas, 1892, about thirty of these fine birds were seen flying over Hertford, and eventually they stopped at Woodhall, where one was shot by Mr. Noble, jun. This bird was mounted by Mr. Seymour of Hertford, and its windpipe, which was preserved, was sent to the museum of King's College, London.

128. Mute Swan. *Cygnus olor* (Gmelin).

This bird is kept in a semi-domesticated state in many parts of the county, and may sometimes, during very hard weather, be seen on the wing looking for open water. It is doubtful whether it has ever occurred in a wild state in Hertfordshire. The variety of this bird known as *C. immutabilis* is said to have occurred at Tring on three occasions.

129. Sheld-Duck. *Tadorna cornuta* (S. G. Gmelin).

This handsome duck has been identified with us several times, the first being in 1883, when Mr. Wilshin shot one at Elstree reservoir during Christmas week; another was seen at the same place in December, 1896. At Tring reservoirs the Hon. Walter Rothschild identified one on January 8th, 1888, and Street observed another on January 10th, 1897.

130. Mallard or Wild Duck. *Anas boscas*, Linn.

This species is to be found sparsely distributed in many parts of the county, but it is only at Tring that one can see vast numbers together. Here some hundreds are reared every year, and regular battues are organized during the shooting season. The system of feeding the birds on this water, the arrangement of causeways and jetties by which they are approached, and indeed the whole management throughout the year is most interesting. A hybrid of this duck and either the wigeon or pintail is said to have been obtained at Tring on February 9th, 1888.

131. Gadwall. *Anas strepera*, Linn.

The Rev. H. H. Crewe stated that the gadwall occurred occasionally at the Tring reservoirs, but there is certainly no record of it in recent times.

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132. Shoveler. *Spatula clypeata* (Linn.).

One or two pairs of this handsome duck nest regularly in the neighbourhood of the Tring reservoirs every year, the nest often being in the reeds or herbage at their margin, although it is occasionally placed in an adjoining field. In August, 1882, a shoveler was killed on the river Lea near Wheathampstead, while a fine drake was accidentally killed near Welwyn on April 10th, 1885, and was preserved for Mr. G. J. Buller.

133. Pintail. *Dafila acuta* (Linn.).

This bird is said to have occurred at Tring on several occasions, but I can only find two actual records of it there. A male was shot on February 14th, 1892, and a female on October 3rd following. The only other recorded occurrence of this handsome species in Hertfordshire is of one which was obtained at Radwell near Hitchin in 1877.

134. Teal. *Nettion crecca* (Linn.).

This little duck is a common visitor to Tring, and occasionally nests there; in fact, the nest and birds mounted in the Natural History Museum at South Kensington were obtained there. It also occurs in varying numbers on Elstree reservoir. Mr. Lucas informed me that he had often seen teal at Oughton Head near Hitchin, but had never been able to ascertain whether they actually nested there. During the winter of 1878-79 this species was plentiful at Sacombe, while it has also been recorded at various times from Hoddesdon, Odsey and Royston.

135. Garganey. *Querquedula circia* (Linn.).

Apparently in former times this bird was not an uncommon visitor to the Tring reservoirs, but nowadays it seems to have quite given up going there. In March, 1849, four males and four females appeared on one of the reservoirs and remained for some days, seven of them eventually being shot. Later in the same month seven more appeared, but only stayed for a short time. Mr. Littleboy was also informed by Miss Williams that this duck was an occasional visitor there. The only other place that I can ascertain has been visited by this bird is Bennington, where one was shot during Easter week in 1879.

136. Wigeon. *Mareca penelope* (Linn.).

The wigeon is a frequent visitor to the reservoirs at Tring and Elstree, and to the former it sometimes comes in considerable numbers. It has also occurred at Garston and Otterspool, both on the river Colne near Watford, and in 1897 one was shot near Hitchin.

137. Red-crested Pochard. *Netta rufina* (Pallas).

The Hon. Walter Rothschild informed Mr. Littleboy that a female of this rare duck was obtained at Tring in September, 1887.

138. Pochard. *Fuligula ferina* (Linn.).

This duck, which is only to be found breeding in comparatively few counties in England, nests at Tring. When and how the bird first became resident there I do not know, but of late years about a dozen pairs at least may be found there every summer. It is rather a late nester, its eggs being seldom found much before the second week in May. During the winter its numbers are usually considerably increased, and it stays until driven away by the water being frozen over. This species has been obtained at various times at Garston, Hoddesdon, Weston near Stevenage, and Munden near Watford.

139. Tufted Duck. *Fuligula cristata* (Leach).

This handsome duck has like the pochard taken up its abode at the Tring reservoirs, and although it is perhaps not so plentiful as that species several pairs nest there annually. The tufted duck is also a late nester, often not laying till quite the end of May or beginning of June. In 1887 a male of this species paired with a pochard and reared young at the reservoirs, where a hybrid between the two was obtained in November, 1891. Tufted ducks have been obtained at Kimpton Hoo near Welwyn, Munden, Oughton Head near Hitchin, and Hoddesdon.

140. Scaup-Duck. *Fuligula marila* (Linn.).

The only definite records I can find of this bird in Hertfordshire are of a female shot on the Ashe near Easneye by Mr. T. F. Buxton, on January 22nd, 1881, and a specimen obtained at the Tring reservoirs in October, 1884. In addition to the above, there is a pair of scaups at Munden, which were killed in that neighbourhood probably between 1840 and 1850.

141. Goldeneye. *Clangula glaucion* (Linn.).

The goldeneye in winter often visits the Tring reservoirs in considerable numbers, but the birds that come are usually females and young birds, old drakes seldom appearing. In fact, I have only one record of an old male in full plumage being seen at Tring, the bird in question having been obtained there in the early part of 1849. The late Dr. Brett informed Mr. Littleboy that a pair of these ducks was shot in the Bushey meadows some years ago.

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142. Long-tailed Duck. *Harelda glacialis* (Linn.).

A young bird of this species was procured at one of the Tring reservoirs on October 28th, 1892.

143. Common Scoter. *Edemia nigra* (Linn.).

In February, 1881, a pair of these ducks was seen on a pond at Bushey Heath, where they stayed for some days, the male eventually disappearing two or three days before its female. The next record is of one shot at Tring in October, 1884; this was a female. In November, 1898, an example was obtained near Rickmansworth.

144. Velvet Scoter. *Edemia fusca* (Linn.).

Captain Clarke-Kennedy stated (*Birds of Berks and Bucks*), on the authority of the Rev. H. H. Crewe, that this bird had been observed on the reservoirs on two occasions, but gave no further particulars.

145. Goosander. *Mergus merganser*, Linn.

Two goosanders were killed at Tring in February, 1885, and the keeper there saw two more on November 25th, 1895, and also two in January, 1896. One is also said to have been obtained near St. Albans in the winter of 1890-91.

146. Red-breasted Merganser. *Mergus serrator*, Linn.

In the collection of birds belonging to the Hon. A. Holland-Hibbert at Munden there are a male and female of this species in splendid plumage, which were obtained there between 1840 and 1850.

147. Smew. *Mergus albellus*, Linn.

In the same collection there is a female smew, which was shot in the neighbourhood on December 28th, 1846. At Tring a flight of nine was seen in February, 1885, while a female was obtained at Welwyn on January 10th, 1891, and an immature bird was caught alive near Watford in October, 1893.

148. Ring-Dove or Wood-Pigeon. *Columba palumbus*, Linn.

This is a common resident throughout the county, whose numbers are greatly increased during the winter. At times it appears in immense quantities, the winter of 1894-95 being especially remarkable for this.

149. Stock-Dove. *Columba ænas*, Linn.

The stock-dove is to be found throughout Hertfordshire, wherever suitable places are at hand for it to nest in; it prefers old trees for its nesting-site, but at Westmill near Buntingford many of these birds at one time used

holes at an elevation of 30 or 40 feet in a large gravel pit.

150. Turtle-Dove. *Turtur communis*, Selby.

This is a common summer migrant, usually arriving about the end of April or beginning of May and leaving again in September or early in October.

151. Pallas's Sand-Grouse. *Syrhaptes paradoxus* (Pallas).

During the great immigration of 1863 two male sand-grouse were recorded as having been shot in Hertfordshire, at Dugdale Hill, South Mimms, in June. Curiously enough this particular place, though surrounded on three sides by Hertfordshire, is not actually in the county, and therefore we cannot rightfully claim these particular birds. However, about the same time nine females were obtained in the neighbourhood of Royston, and no doubt some of these came from the Hertfordshire side. During the next great invasion the county was more fortunate, as on May 20th, 1888, two sand-grouse, which came into the possession of Mr. F. M. Campbell, were shot on Jepp's Farm near Hoddesdon, out of a flock of forty. A week later Mr. A. W. Dickenson saw seven of these birds flying near Batch Wood, St. Albans; while on June 4th Mr. Chapman of Bennington obtained a fine specimen at that place; he first thought the bird was a golden plover on account of its flight, but when he heard its note, which he described as 'cruck, cruck,' he recognized that it was a strange bird.

152. Pheasant. *Phasianus colchicus*, Linn.

This bird is strictly preserved in most parts of the county, and large numbers are reared annually. Albino and pied varieties are not uncommon.

153. Partridge. *Perdix cinerea*, Latham.

This is also a bird which is largely preserved, but of course some parts of the county afford better partridge shooting than others. There have been several cases reported of this species nesting on the top of hay and straw ricks. Several curious colour varieties have been obtained in Hertfordshire, amongst which may be mentioned a pair of birds which had white wings and tails.

154. Red-legged Partridge. *Caccabis rufa* (Linn.).

The French or red-legged partridge is fairly plentiful in many parts of the county. A curious nesting-place, chosen by a bird of this species near Royston, was a deserted wood-pigeon's nest, about six feet from the ground,

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situate in a small plantation. In this the bird laid thirteen eggs; but the owner of the land, fearing that harm might come to the young birds, removed the eggs and put them under a hen.

155. Quail. *Coturnix communis*, Bonnaterre.

This is a not an uncommon visitor to Hertfordshire, though chiefly along the northern part of the county, where it probably nests.

156. Land-Rail or Corn-Crake. *Crex pratensis*, Bechstein.

This is a common summer visitor to Hertfordshire, arriving usually towards the end of April. It has on two or three occasions been obtained in the months of December and January.

157. Spotted Crake. *Porzana maruetta* (Leach).

The first record I have of this species in this county is in 1878, when one was shot in the Colne meadows near Watford on September 4th. In October, 1881, another was found under the telegraph wires near the same town, and is I believe now in the possession of Mr. Downer. Two were picked up dead by the railway near St. Albans in October, 1880; while in September, 1883, one was shot at the Tring reservoirs, another being obtained there in October, 1885. A spotted crake now in the possession of Mr. Latchmore was killed in November, 1893, by flying against the telegraph wires near Hitchin, in the neighbourhood of which town others have been obtained from time to time, one being procured there during the winter of 1895-96. In the latter year a bird of this species was obtained at Offley in August.

158. Little Crake. *Porzana parva* (Scopoli).

On the authority of the Hon. Walter Rothschild I include this species in the list. A specimen is said to have been obtained at one of the Tring reservoirs on January 5th, 1887.

159. Baillon's Crake. *Porzana bailloni* (Vieillot).

In the *Zoologist* for 1892 Mr. W. H. M. Ayres recorded the occurrence of this species in Hertfordshire. The bird in question was shot on October 24th, 1891, in the marshes near Cheshunt, which were then flooded. It was in good plumage but was very thin, and was sent to Rowland Ward for preservation.

160. Water-Rail. *Rallus aquaticus*, Linn.

This bird has occurred in different parts of the county at various times, and occasionally in some numbers. It occurs regularly at

Tring, where it probably nests, although that has not been definitely ascertained.

161. Moor-Hen. *Gallinula chloropus* (Linn.).

This bird is plentiful throughout the county, often frequenting even small ponds during the nesting season.

162. Coot. *Fulica atra*, Linn.

This species occurs on many of the ornamental and other waters in Hertfordshire, but nowhere is it to be found in such numbers as at the Tring reservoirs, where it may be seen in scores.

163. Great Bustard. *Otis tarda*, Linn.

Before the day of drills and horse-hoes, hedges and plantations, this bird undoubtedly was found in Hertfordshire, as in several other counties. The chalk hills along the northern boundary made a splendid home for it. Now, alas, it has disappeared for ever, and only one specific record of it remains, though Willughby and Ray gave Royston Heath as one of the districts in which it was then found. It disappeared however without any note being made of its habits and haunts in this county. The last occasion on which a great bustard appeared in Hertfordshire was at the beginning of the present century, when one was seen in the neighbourhood of Royston; this bird the whole population turned out to shoot, but without success, and it eventually disappeared.

164. Thick-knee or Stone-Curlew. *Edicnemus scolopax* (S. G. Gmelin).

This is another species which I am afraid is following in the footsteps of the last-named bird, and for the same reasons. A very few years ago this bird was by no means uncommon along the open country to the north, but now very few visit there in a year.

165. Dotterel. *Eudromias morinellus* (Linn.).

The decrease of this species on migration in Hertfordshire is not due so much to internal as external causes, the bird I am afraid being on the decrease as a breeding species in the British Isles, and therefore there are fewer 'trips' of dotterel passing through the county on their way north. It was chiefly in the district between Royston and Hitchin that these birds were seen; there they appeared fairly regularly every year at one time, but now their visits are few and far between.

166. Ringed Plover. *Ægialitis biaticula* (Linn.).

This bird is a regular visitor to Hertfordshire on the spring and autumn migration, being seen every year at Tring, while it has also been obtained at Royston and at Park Street near St. Albans.

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167. Golden Plover. *Charadrius pluvialis*, Linn.

Small parties of golden plover may usually be seen with the flocks of lapwings during the winter, arriving and departing with the commoner bird, but occasionally immense flocks appear more in the open country on the north, although good-sized parties are often seen at Tring. In 1882 golden plovers were seen near Hertford during the months of August and September, which is unusually early for them to arrive.

168. Grey Plover. *Squatarola belvetica* (Linn.).

This bird, to the best of my knowledge, has only occurred in Hertfordshire on three occasions. The first was obtained at Tring in March, 1885, where another was shot by Mr. Ernest Hartert on December 12th, 1897, while he was waiting for duck; this second bird was a male in fine plumage. The third specimen was a female, which was picked up near Royston in the spring of 1893, having come in contact with the telegraph wires.

169. Lapwing or Peewit. *Vanellus vulgaris*, Bechstein.

This bird nests in small numbers throughout the county, but it is only in the winter that they occur in any quantities. Then very often they are to be seen in enormous flocks from the beginning of December well on into February, more especially in the open country to the north of the county.

170. Oyster-Catcher. *Hæmatopus ostralegus*, Linn.

This species was first recorded in this county in April, 1866, when one was shot at Elstree reservoir, another being killed at the same place by Mr. Wilshin in February, 1868. In 1897 an oyster-catcher was obtained at Tring on September 24th, while two were shot at Rickmansworth in November, 1898. Two more were also observed at Elstree on April 10th, 1899.

171. Grey Phalarope. *Phalaropus fulicarius* (Linn.).

In the seventies an example of this species was shot at Grove Mill near Hitchin by Mr. Latchmore, in whose possession it now is. In October, 1885, one was obtained at Tring, where four more were procured in the corresponding month in 1891, while in December, 1899, another was picked up dead in a wood called 'Stubblings' at Tring Park. This latter bird was quite fresh when found, and was very lean, as if starved. In November, 1891, a grey phalarope was shot out of a small pond at Chiltern Green by a Mr. Piggott.

172. Woodcock. *Scolopax rusticula*, Linn.

This well-known bird is an annual visitor to Hertfordshire, arriving usually in October. A few pairs also occasionally stay to breed here, the nest having been found at Tring Park, Hoddesdon, Haileybury and Hertford Heath at various times.

173. Great Snipe. *Gallinago major* (Gmelin).

Mr. Harting in his *Birds of Middlesex* states that this bird has occurred at Bushey Heath many years ago. An albino variety also is said to have been obtained at Tring in August, 1880. The latest record is of a specimen shot at Slip End, Sandon, on September 11th, 1897, by Mr. J. H. Phillips of Royston, and now in his possession.

174. Common Snipe. *Gallinago cælestis* (Frenzel).

This is a fairly plentiful visitor to Hertfordshire, but so far as I am aware it has never been found nesting in the county.

175. Jack Snipe. *Gallinago gallinula* (Linn.).

The jack snipe is a bird about which there is very little information so far as Hertfordshire is concerned, but it probably visits suitable localities during the winter, and has undoubtedly been obtained at Tring, while in 1883 one was sent to Mr. Spary for preservation, which had been shot near St. Albans.

176. Dunlin. *Tringa alpina*, Linn.

This species is a regular visitor to Tring at all periods of the year, and it has also occurred near Royston, and at Hitchin, Redbourn and Elstree.

177. Little Stint. *Tringa minuta*, Leisler.

Two little stints were obtained at Tring in August, 1885.

178. Temminck's Stint. *Tringa temmincki*, Leisler.

A bird of this species is said, on the authority of the Hon. W. Rothschild, to have been shot at one of the Tring reservoirs in September, 1887.

179. Sanderling. *Calidris arenaria* (Linn.).

This bird occasionally appears at the Tring reservoirs on migration, while in December, 1893, one was shot near St. Albans.

180. Ruff (♀ Reeve). *Machetes pugnax* (Linn.).

In the collection at Munden there are two ruffs and a reeve which were obtained in that neighbourhood probably between 1840 and 1850. Mr. C. P. Stewart also has a reeve which was shot at Chisfield near Stevenage, about 1882. Tring has been favoured by this species on three occasions at least, one

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having been shot there in August, 1884, and two in the same month in 1886, while on August 17th, 1895, two were seen there, one of which was afterwards shot and turned out to be a reeve.

181. Common Sandpiper. *Totanus hypoleucus* (Linn.).

This bird is a common visitor on the spring and autumn migration to many parts of Hertfordshire, arriving about the third week in April, but only on one occasion has it been found nesting in the county. This was in 1896, when the miller at Hyde Mill near Hitchin, found a nest under the high bank of the mill sluice-pit. Mr. Latchmore, who informed me of this, further corroborated it, as he had often flushed the birds from the place, but had never thought of looking for a nest.

182. Wood-Sandpiper. *Totanus glareola* (Gmelin).

The Hon. Walter Rothschild informed the late J. E. Littleboy that an example of this species was obtained at the Tring reservoirs in August, 1886.

183. Green Sandpiper. *Totanus ochropus* (Linn.).

This is a fairly regular visitor to Tring on migration, and at one time frequently appeared at Ickleford near Hitchin. It has also been observed at Weston near Stevenage, Hertford, St. Albans, Radlett and Braughing.

184. Redshank. *Totanus calidris* (Linn.).

The redshank has appeared at Tring more frequently than formerly during the last two or three years, as up to the year 1898 it had only been recorded in Hertfordshire on about three occasions, but since then two or three have been seen at the reservoirs each year. It has occurred near Watford once, one having been shot in the Colne meadows in 1875 or 1876, while in June, 1891, a redshank was picked up on the Midland Railway between St. Albans and Radlett.

185. Greenshank. *Totanus canescens* (Gmelin).

The greenshank may be considered an annual visitor to the Tring reservoirs, as some appear there every year in the spring and autumn. The only other place in the county from which it has been recorded is Watford, where one was shot by Mr. A. Dyson in the Colne meadows in the early part of 1880.

186. Bar-tailed Godwit. *Limosa lapponica* (Linn.).

In December, 1880, a bird of this species was obtained at the Tring reservoirs.

187. Black-tailed Godwit. *Limosa belgica* (Gmelin).

A black-tailed godwit is said to have been shot at Tring in September, 1886.

188. Curlew. *Numenius arquata* (Linn.).

Whether this bird occurs nowadays oftener or not than formerly I do not know, but it is certainly the fact that there are more records of it at the present time. In May, 1882, a female was shot at Sacombe Park, while later in the year curlews were heard near Hertford. It has also been recognized at Great Berkhamsted, Elstree, Royston and Stevenage. But it is to Tring that these birds come most frequently: formerly its visits there were few and far between, but during the last few years it has appeared regularly and at times in some numbers, the largest number seen there at once being sixteen.

189. Whimbrel. *Numenius phaeopus* (Linn.).

A whimbrel was shot during the month of July, 1881, in the parish of Throcking, by Mr. John Coleman. The only other example ever obtained in Hertfordshire was procured at Buckland near Royston, on May 17th, 1883.

190. Black Tern. *Hydrochelidon nigra* (Linn.).

This pretty bird is to be seen at Tring every year and often in considerable numbers, as many as sixty or seventy having been observed there at one time. One noticeable fact about the visits of this species is that it comes all through the summer, instead of only appearing in the spring and autumn. On April 24th, 1886, Mr. Henry Lewis saw two black terns between Park Street and Moor Mill, one of which was eventually shot and mounted by Mr. Luff of St. Albans. Mr. Benefield of Ware also informed Mr. Littleboy that he obtained six of these birds some years ago near Broxbourne, and that on May 13th, 1886, he observed a pair of them flying over some flooded meadows on the banks of the Stort in the parish of Gilston; they were very tame and frequently came within a few yards of him. Mr. E. P. Thompson mentions a black tern which was obtained at Elstree reservoir about 1882: it was sitting on a buoy to which boats were attached at the time.

191. Sandwich Tern. *Sterna cantiaea*, Gmelin.

The only record I can find of this species in Hertfordshire is that two, which I believe passed into the possession of the Hon. W. Rothschild, were killed at the Tring reservoirs in October, 1886.

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192. Common Tern. *Sterna fluviatilis*, Naumann.

This is a bird which occurs in some numbers at the reservoirs every summer, as many as fifty or sixty being sometimes seen there together. It has also been observed at Elstree reservoir, Royston and Sawbridgeworth.

193. Arctic Tern. *Sterna macrura*, Naumann.

An arctic tern is said to have been obtained at Tring in the spring of 1886.

194. Little Tern. *Sterna minuta*, Linn.

This little bird usually appears at Tring every summer, while it has also been obtained once or twice in the neighbourhood of Royston.

195. Black-headed or Brown-headed Gull. *Larus ridibundus*, Linn.

This gull is a frequent visitor to Hertfordshire, and especially to Tring. It has also been reported from Sawbridgeworth, Hemel Hempstead, Hertford, and Heronsgate near Rickmansworth.

196. Common Gull. *Larus canus*, Linn.

So far as Tring is concerned this gull perhaps comes quite up to its name, as it is certainly one of the commonest of the family there. It has also been recorded from Hemel Hempstead, where one was shot towards the end of 1881.

197. Herring-Gull. *Larus argentatus*, Gmelin.

Formerly this species was quite a rarity in Hertfordshire, very few specimens having been obtained; but in the autumn of 1898 Mr. M. R. Pryor continually saw small parties of herring-gulls, accompanied probably by some of the next mentioned species, flying over Weston Manor near Stevenage. This species has also occurred at Tring, Berkhamsted, Royston, St. Albans, Hemel Hempstead and Hertford.

198. Lesser Black-backed Gull. *Larus fuscus*, Linn.

This is no doubt the black-backed gull which is seen most frequently at Tring, where birds of that description appear every year, and it is to this species that some of the larger gulls seen going over may no doubt be referred. At Munden there is a lesser black-backed gull, which was obtained there between 1840 and 1850.

199. Great Black-backed Gull. *Larus marinus*, Linn.

This bird is stated by Street, the keeper at the Tring reservoirs, to occasionally appear

there, and his identification is probably correct, as in his letters he especially differentiates between black-backed and great black-backed gulls. It is not however a common visitor.

200. Kittiwake. *Rissa tridactyla* (Linn.).

There are only about four records of this little gull in Hertfordshire. In January, 1885, two were shot at Tring, while in the February following a dead bird was picked up at London Colney. I saw a kittiwake on Berkhamsted Common on May 19th, 1895; and in January, 1897, one was picked up dead in the Priory garden at Hitchin.

201. Arctic or Richardson's Skua. *Stercorarius crepidatus* (Gmelin).

This bird was first recorded as a Hertfordshire bird from an example which was shot near Stevenage on November 5th, 1881. The only other county specimen was obtained in the following year, at Langleybury, and was presented by Mr. Loyd to the Watford Public Library.

202. Guillemot. *Uria troile* (Linn.).

In November, 1882, a guillemot was shot by Mr. F. Hicks at Elstree reservoir; while another was shot on the Hertford meads on April 5th, 1888.

203. Little Auk. *Mergulus alle* (Linn.).

This is a wanderer, which is usually found inland only after very stormy weather. The first recorded bird of this species in Hertfordshire was picked up between Baldock and Royston in 1846. In December, 1882, an old bird, which lived some days in confinement, was found alive near Langley, about five miles from Hitchin; and in 1885 a dead little auk was found in a field near Symond's Hyde, Sandridge. On November 22nd, 1893, a specimen, which had come to grief at the telegraph wires, was discovered between Litlington and Royston, near the latter of which places another, which is now in the possession of Mr. Nash, occurred in 1894. In the following year several were obtained, one being picked up at Sarratt on January 25th, and others being found about the same time near Ashwell, Hitchin and Welwyn.

204. Puffin. *Fratercula arctica* (Linn.).

This marine species has wandered inland to this county on several occasions. In March, 1882, one was picked up alive at Pirton, near Hitchin, another being caught near Broxbourne in the following month, while in November of the same year a third was found at Preston, also near Hitchin. In 1883 a specimen, which had apparently been injured by the

A HISTORY OF HERTFORDSHIRE

telegraph wires, was obtained at Reed near Royston ; and in the next year one was picked up at Munden. In the winter of 1890-91 an example was procured at or near Totteridge, and one was shot at Roxford Farm, Bayfordbury, at the end of 1893 ; while on November 15th, 1894, a bird of this species was picked up alive near St. Albans.

205. Great Northern Diver. *Colymbus glacialis*, Linn.

In December, 1841, an immature great northern diver was obtained at the Tring reservoirs, where also one was shot on January 1st, 1887 ; others being seen there on February 15th following, and on January 12th, 1897. At Elstree, a specimen was obtained on December 26th, 1876, and another, an immature bird, in 1884.

206. Great Crested Grebe. *Podiceps cristatus* (Linn.).

Few places in the British Isles have this magnificent bird resident in such numbers as are to be found at the Tring reservoirs. It arrives there early in March, leaving again usually in November ; and, thanks to the protection afforded to it there, thirty or forty pairs, and often more, may be seen during the nesting season. I am not aware of any other place in the county where it breeds.

207. Red-necked Grebe. *Podiceps griseigena* (Boddaert).

The Rev. H. H. Crewe stated in *The Birds of Berks and Bucks* by Clarke-Kennedy, that

he had identified this bird at Tring on two occasions, but unfortunately he gave no further particulars.

208. Slavonian Grebe. *Podiceps auritus* (Linn.).

In 1884 a Slavonian grebe was killed at Radwell, near Hitchin, in the month of January. In 1881 one was caught by some boys in Gadebridge Park, Hemel Hempstead. Two also were shot at Tring in October, 1884, where I believe the bird had in 1878 been identified by Mr. T. Harris of Leighton Buzzard.

209. Little Grebe or Dabchick. *Podiceps fluviatilis* (Tunstall).

This bird is a common species throughout Hertfordshire, wherever suitable localities are to be found, and nests in some numbers on many of the little rivers in the county. Although the nest is usually a floating structure, I on one occasion, at Water End, Great Gaddesden, found one built on the bank of the Gade.

210. Storm-Petrel. *Procellaria pelagica*, Linn.

This species has been obtained in most inland counties, and Hertfordshire is no exception in this respect, since in 1881 a male and female were picked up dead in a field near East Lodge, Hemel Hempstead, on December 15th, while one was captured alive on December 11th, 1886, on the Midland Railway line near St. Albans.

MAMMALS

It is unfortunately the case that until a few years ago the mammals of Hertfordshire had received but little attention from local naturalists. It seems that until recently no records whatever were kept of the occurrence of rare species or varieties, and it is now when all information that can be collected is necessary for the compilation of a satisfactory list of the mammals of the county that this neglect of former years is especially felt. It will therefore be readily understood that with merely the records and notes of the past few years at hand the following list is of necessity very limited, and that the record of extinct species or of those which are becoming so can scarcely be given. The chief sources from which I have procured information are the *Transactions of the Watford Natural History Society* and the *Transactions of the Hertfordshire Natural History Society*; I have also found some interesting records in Mr. Harting's articles on British Mammals which have appeared from time to time in the *Zoologist*.

Of the several branches the *Cheiroptera* have received the least amount of attention. Only four species of bats have up to the present been identified, and it is reasonable to suppose that when more time and trouble have been given to them, several species which are found in other counties will be added to the list.

The distribution of the various mammals has by no means been thoroughly worked out, so that in the case of some it is impossible to say more than that they are to be found in the county, without reference to the localities in which they most frequently occur. There is little of special interest that can be said about the majority, as they are common throughout the county, but to such animals as the badger (*Meles meles*), the polecat (*Putorius putorius*), the pine marten (*Mustela martes*), and the otter (*Lutra lutra*), especial interest is attached owing to their declining numbers and rare occurrence at the present day. Unfortunately full notes only concerning the first-named are to hand, and for these I have to thank Dr. Brett and Mr. T. Vaughan Roberts from whose respective pens most interesting and valuable notes on this species have appeared at intervals in the *Trans. of the Hertfordshire Nat. Hist. Soc.* At the end of the list will be found the mention of two animals, the red deer (*Cervus elaphus*) and the fallow deer (*Cervus dama*), which appear in the county at the present day only in a semi-domesticated state, and are not actually *feræ naturæ*. These have been included, for I consider that they are practically a link between the past and the present, since these animals were no doubt at one time to be found in a wild state in Hertfordshire, as

A HISTORY OF HERTFORDSHIRE

in many other counties in England. While mentioning these two animals I should like to refer to a very interesting paper on Hertfordshire Deer Parks which was read before the Hertfordshire Natural History Society by Mr. Harting in 1881. He stated that at one time there were some forty-four deer parks in this county, but that at the present day there were only ten which had not been disparked. In one of these only—Ashridge Park near Great Berkhamsted—is the red deer now kept, though probably it was to be found in several others in days gone by. In all the other parks which now exist there are only fallow deer.

CHEIROPTERA

1. Lesser Horseshoe Bat. *Rhinolophus hipposiderus*, Bechstein.

The Rev. H. A. Macpherson in the *Zoologist* for 1887, p. 152, states that a fresh example of this species, which had been obtained in Hertfordshire, was sent in the summer of 1886 to Spalding of Notting Hill.

2. Long-eared Bat. *Plecotus auritus*, Linn.

The long-eared bat is generally distributed throughout the county.

3. Great or White's Bat. *Pipistrellus noctula*, Schreber.

Bell—*Scotophilus noctula*.

White—*Vespertilio altivolans*.

This bat is found in all parts of Hertfordshire.

4. Pipistrelle. *Pipistrellus pipistrellus*, Schreber.

Bell—*Scotophilus pipistrellus*.

This is an abundant species everywhere in the county.

INSECTIVORA

5. Hedgehog. *Erinaceus europæus*, Linn.

This animal is common in Hertfordshire, though many are destroyed in various ways. A female hedgehog in my possession in July of this year (1900) devoured one of the young ones which I found with it.

6. Mole. *Talpa europæa*, Linn.

The mole is very abundant with us, though apparently it is more plentiful during some years than others. In the winter of 1879–80 it seems to have been unusually numerous throughout the county. This species is subject rather often to variations in colour, for in the *Trans. of the Herts Nat. Hist. Soc.* for 1883 the late Dr. Brett recorded the finding of thirty moles of a white or cream colour in about half an acre of a field of oats. Some albino moles also, caught in a hedgerow at Ley Farm on the St. Albans Road, Watford,

were exhibited by Mr. T. Vaughan Roberts at a meeting of the society in December, 1891.

7. Common Shrew. *Sorex araneus*, Linn.

This animal is found throughout the county, but of its congener (*S. pygmaeus*) I can find no record. In August or September, 1893, Mr. Henry Lewis of St. Albans obtained from a clover-field near that place two specimens of the common shrew which were albinos; this is a most unusual occurrence, as albinism is seldom found in this species.

8. Water-Shrew. *Neomys fodiens*, Pallas.

Bell—*Crossopus fodiens*.

This species is to be found in many parts of Hertfordshire where the locality is suitable. There are, I believe, several specimens in the national collection which are labelled as having been obtained at Tring.

CARNIVORA

9. Fox. *Vulpes vulpes*, Linn.

Bell—*Vulpes vulgaris*.

So long as foxhunting lasts in this country will the fox remain with us, but when the evil day comes that the noble sport is given up in England then will this species soon become extinct. In many districts in Hertfordshire the fox is by no means so plentiful as can be desired. This is chiefly due to the fact

that so much of the county is given up to shooting rather than hunting. It is however most strictly preserved by many owners in the county.

10. Pine Marten. *Mustela martes*, Linn.

Bell—*Martes abietum*.

The pine marten has unfortunately been so long extinct in Hertfordshire that I am

MAMMALS

unable to find more than one record of it. This is in Mr. Harting's article on the British marten which appeared in the *Zoologist* for 1891, p. 456, where it is stated that a specimen was obtained in Oxhey Wood near Watford on December 26th, 1872, which animal is, I believe, now preserved at Bushey.

11. Polecat. *Putorius putorius*, Linn.

Bell—*Mustela putorius*.

This species is nearly, if not quite, extinct as a Hertfordshire mammal, although at one time not an uncommon resident. In the neighbouring county of Buckingham polecats are still to be found, and may occasionally still travel into Hertfordshire. Mr. T. Vaughan Roberts has informed me that Seymour of Hertford, who was at one time keeper at Ware Park, trapped one there about 1885. Mr. Roberts also stated that a polecat was obtained some years ago near Hitchin. These are the only specific records I can find of this animal in Hertfordshire.

12. Stoat. *Putorius erminius*, Linn.

Bell—*Mustela erminea*.

This is a common inhabitant of the county although it suffers a great deal at the hands of gamekeepers. This species occasionally frequents mole-runs, as is evidenced by one being caught in a mole-trap at Knightlands Farm, Barnet, in February, 1891. Albino specimens have from time to time been procured in Hertfordshire.

13. Weasel. *Putorius nivalis*, Linn.

Bell—*Mustela vulgaris*.

The weasel is also common throughout the county, though its numbers, as in the case of the last species, are well kept down by gamekeepers. The extreme fearlessness of this animal is wonderful, and is shown by the fact that Lord Aldenham's keeper once killed one with his foot when it approached him in the grass, while he was feeding young pheasants.

14. Badger. *Meles meles*, Linn.

Bell—*Meles taxus*.

Although perhaps not so plentiful as formerly, the badger is still far from being extinct in Hertfordshire, and breeds in large earths in many parts of the county. The late Dr. Brett wrote a short article on it in

the *Trans. of the Watford Nat. Hist. Soc.* for 1877, in which there is a great deal of information about its occurrence in Hertfordshire. From that article it would appear that this animal was to be found at Ashridge, Ashlyns near Berkhamsted, Langleybury, The Grove, Cassiobury Park and Munden near Watford, Aldenham and Hadham Hall. At Cassiobury between 1830 and 1840 there was a badgers' earth at a spot called Badgers' Dell, from which badgers were obtained and sold to a man at Croxley Green, who kept a public-house at which he used to have badger-baiting. This was also done annually at Sandridge Fair near St. Albans; while at Aldenham there lived for many years an old man who was a kind of purveyor of badgers for this amusement. By 1887 the badgers in the neighbourhood of Watford appear to have nearly died out, though from 1880 to 1883 there were several litters found in the district. In 1886 a badger weighing 25 lb. was caught in Lord Cowper's park at Panshanger about the middle of February, while in the society's *Transactions* for 1892 Mr. T. Vaughan Roberts mentioned Odsey as an additional locality for this species. In the following year, in a paper on Hertfordshire Mammals in the same journal, he gave a very interesting account of a large earth at Ashlyns which had existed there for many years.

15. Otter. *Lutra lutra*, Linn.

Bell—*Lutra vulgaris*.

This animal cannot be considered common in Hertfordshire, although it has occurred on a good many occasions. It is to Dr. Brett again that we are indebted for particulars of it in the county. About 1856 an otter was killed in some osier beds past Tolpits in the neighbourhood of Watford, while a young one was killed in the Colne above that town. In 1810 one was seen at Piggott's End on the river Gade. The Hon. A. Holland-Hibbert has a stuffed otter in his collection at Munden, which was shot there in February, 1875. This animal, which was a male, weighed over 32 lb. and measured 4 feet 2½ inches in length. In 1880 traces of otters were again found near Munden, while in 1883 two animals of this species were seen near Cassiobury. Seymour showed Mr. Vaughan Roberts two others, one of which was trapped in Ware Park about 1888, while the other was shot about a mile and a half from Hertford in 1892.

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RODENTIA

16. Squirrel. *Sciurus leucourus*, Linn.

Bell—*Sciurus vulgaris*.

This is a fairly plentiful resident in most parts of the county.

17. Dormouse. *Muscardinus avellanarius*, Linn.

Bell—*Myoxus avellanarius*.

This small animal is certainly plentiful in many parts of the county, being often caught in the autumn and kept as a pet. In the *Zoologist* for 1885, p. 204, it is stated, on the authority of the Rev. H. A. Macpherson, that it was found commonly in Hertfordshire.

18. Brown Rat. *Mus decumanus*, Pallas.

This is another very common resident, which often does a vast amount of damage. In January, 1892, a specimen of the dark variety, which is sometimes known as *Mus hibernicus*, was obtained at Wheathampstead and was preserved by Cane of Luton.

19. House Mouse. *Mus musculus*, Linn.

The common mouse is ubiquitous.

20. Wood Mouse or Long-tailed Field Mouse. *Mus sylvaticus*, Linn.

This animal is found commonly throughout the county.

21. Harvest Mouse. *Mus minutus*, Pallas.

In a paper by Mr. Harting on the harvest mouse, which appeared in the *Zoologist* for 1895, p. 421, Hertfordshire is mentioned on the authority of the late Frederick Bond as being a county in which this species has occurred. It is recorded in the *Fauna and Flora of Haileybury* (1888) as having been found in that neighbourhood. I also have found it in the county; in 1900 I came across the nest and young and saw the parent in the neighbourhood of Berkhamsted.

22. Water Vole. *Microtus amphibius*, Linn.

Bell—*Arvicola amphibius*.

The water-rat, as it is usually called, is generally distributed throughout Hertfordshire wherever the conditions are suitable.

23. Field Vole. *Microtus agrestis*, Linn.

Bell—*Arvicola agrestis*.

This is an extremely common species throughout Hertfordshire.

24. Bank Vole. *Evotomys glareolus*, Schreber.

Bell—*Arvicola glareolus*.

In the *Zoologist* for 1887, p. 365, Mr. Harting stated, on the authority of Yarrell, that this species had occurred in the county, while on p. 425 of the same journal the late Frederick Bond included Hertfordshire in the list of counties in which he had taken the bank vole. In March, 1893, Mr. T. Vaughan Roberts had some of these animals sent to him from near Berkhamsted, where they had been found in a nest in a heap of mangolds. He had a cage made for them, and some of them eventually bred in confinement, but after there had been two broods he thought it time to get rid of them. He was accustomed to feed them on corn, bread, apples, carrots, gooseberries, etc., and he gave them plenty of water. In the *Trans. Herts Nat. Hist. Soc.* for 1893, p. 173, and the *Zoologist* for 1892, p. 329, may be found very interesting accounts by Mr. Roberts of his experience with these creatures.

25. Common Hare. *Lepus europæus*, Pallas.

Bell—*Lepus timidus*.

This animal is found in most parts of the county, though its numbers vary considerably in different districts and in different years. In some places it is very common, while in others only one or two can be found in a day. It is most interesting to observe how the colour of this species varies according to the soil of the district in which it is found.

26. Rabbit. *Lepus cuniculus*, Linn.

This species is very abundant in nearly every part of the county, though no doubt more plentiful in some places than others. Dr. Brett in the *Trans. Watford Nat. Hist. Soc.* for 1878, p. 112, gave some interesting notes on some coloured varieties of this species. He mentioned that a Mr. King of Wiggshall had a wild grey rabbit which about twenty years before had produced three black young ones. These he had preserved, and, at the time that Dr. Brett wrote, Mr. King had a large colony of black rabbits, in fact in 1878 they outnumbered the grey animals. He also stated that pied varieties never occurred, and that, although the black and the grey interbred, the offspring were always all black or all grey.

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UNGULATA

27. Red Deer. *Cervus elaphus*, Linn.

Although neither this nor the following species occurs in a wild state in Hertfordshire at the present day, a paper on the mammals of the county is hardly complete without some mention of them. In the *Trans. Watford Nat. Hist. Soc.* for 1878, p. 32, there is mention made of the discovery, in the peat in Panshanger Park, of a fine pair of antlers and fifteen vertebræ which were referred to this species. The antlers were in a fine state of preservation and measured 3 feet in length, 21 inches in spread, and 7 inches in circumference just above the place where they joined the skull. Whether these remains belonged to the indigenous red deer of Hertfordshire or to the former enclosed animals is uncertain, but I should rather think to the former category. There is however the possibility of their belonging to enclosed animals as formerly there were deer in this

park, although I believe there are none there at the present day. In the *Transactions of the Herts Nat. Hist. Soc.* for 1883, p. 97, Mr. Harting supplies a very interesting paper on Hertfordshire deer parks, from which it would appear that at that time this species was only kept in one park in the county, viz. Ashridge Park, the seat of Earl Brownlow. There are still red deer there, some of which occasionally bear fine heads. During the present year I saw a stag there with a fine head of nineteen points. I believe that at the present time there are from 100 to 150 red deer there.

28. Fallow Deer. *Cervus dama*, Linn.

Though now only to be found in parks in this county, no doubt the fallow deer, which still exists in a practically wild state in Epping Forest in the adjoining county of Essex, was also found wild here. Those days however have unfortunately long since passed away.

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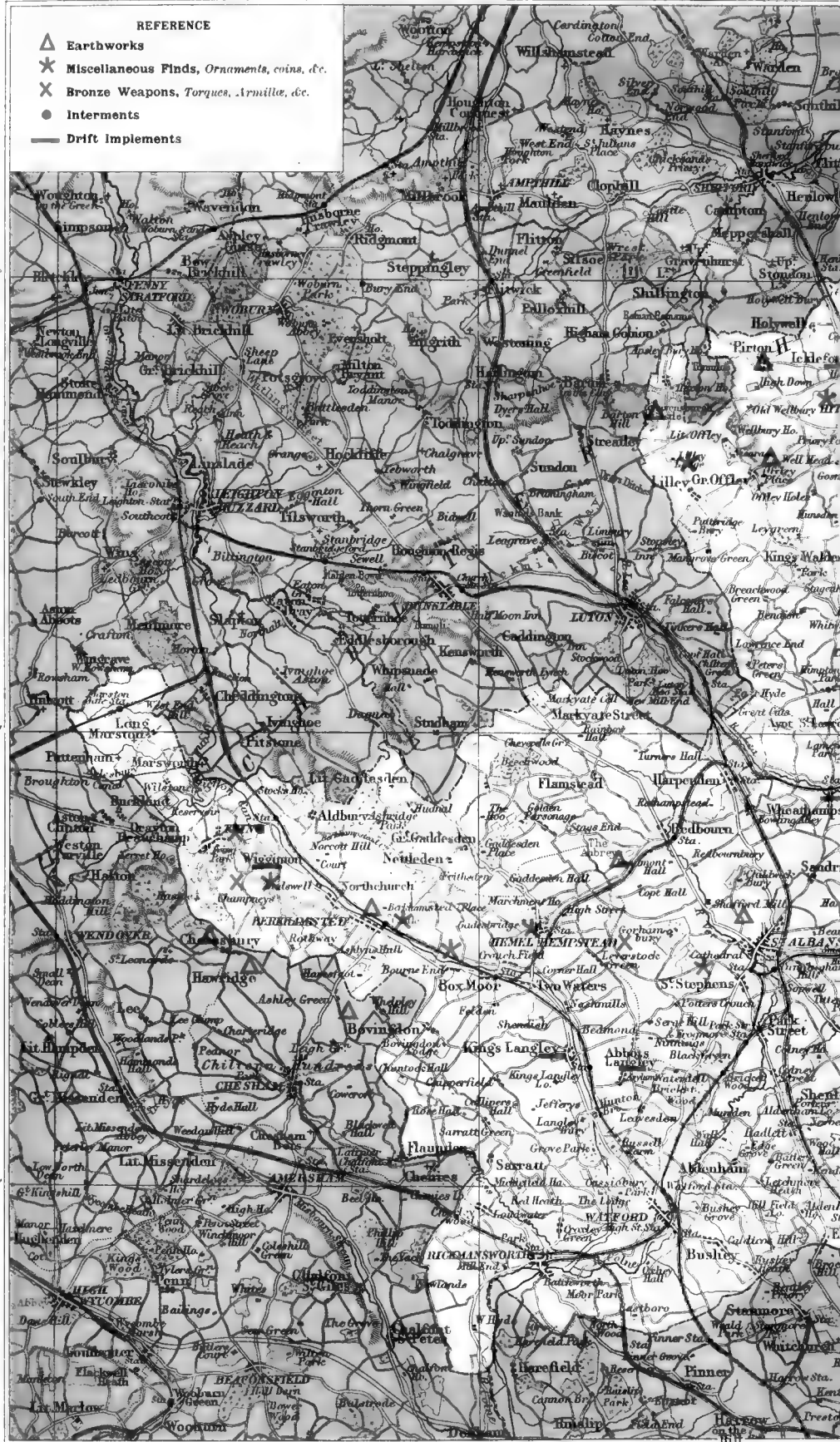
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- REFERENCE
- △ Earthworks
 - * Miscellaneous Finds, Ornaments, coins, &c.
 - X Bronze Weapons, Torques, Armille, &c.
 - Interments
 - Drift Implements

52'

50'

40'



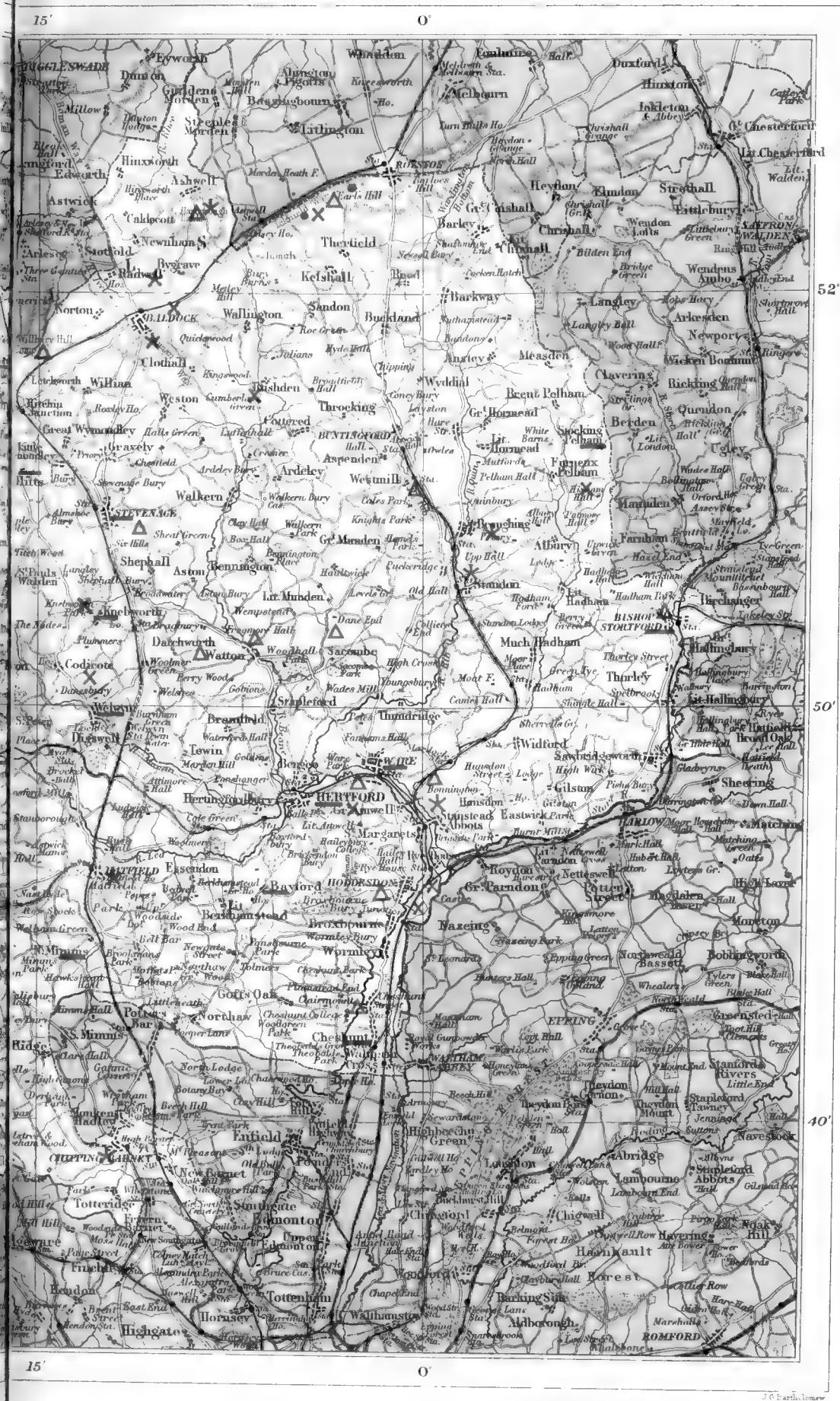
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The Edinburgh Geographical Institute

SCALE 4 MILES TO AN INCH





THE PREHISTORIC PERIOD

THE county of Hertford is fairly rich in the remains of the prehistoric, or, as it may perhaps in this instance be called, the pre-Roman period. In treating of it, it will be well to adopt the usual subdivisions of the Palæolithic, Neolithic, Bronze and late-Celtic periods, and, in addition, to call attention to some of the more remarkable earthworks in the county, though the age of many of them is uncertain, and may possibly be post-Roman.

In giving summary notices of the various discoveries, references will in most cases be made to the works in which more detailed accounts of them may be found.

THE PALÆOLITHIC PERIOD

When first, about the year 1859, special attention was called to the discovery in the gravels of the valley of the Somme at Abbeville and Amiens of implements of flint evidently fashioned by the hand of man, it was soon perceived that they must belong to a far earlier time than the better-known weapons and implements of the Stone Age as defined by the Scandinavian school of archæologists. Not only did these drift-implements occur associated with a fauna different from that now prevailing in western Europe, but their forms and the character of their workmanship were also different. Many of the animals whose remains are found in the implement-bearing gravels, such as the *Elephas primigenius*, or Siberian mammoth, and the *Rhinoceros tichorbinus*, or woolly-haired rhinoceros, are now absolutely extinct; while others, such as the reindeer, are now only found in latitudes farther north. Among the mollusca in the beds in which the implements are found, some are also extinct, while others occur only in distant *habitats*. The *Corbicula fluminalis* or *Cyrena consobrina*, which is of not unfrequent occurrence in the implementiferous beds, is now no longer living in any river nearer than the Nile. Instead, moreover, of being usually found upon the surface of the ground, at a moderate depth below it, or in graves or burial mounds, the new class of implements was often and indeed generally discovered in undisturbed beds of loam, sand, and gravel of considerable thickness, and principally towards the base of such beds. And further, these deposits in which the implements were found presented the appearance of having been laid down by flood-waters in the valleys of ancient rivers, which in the course of ages had been deepened

A HISTORY OF HERTFORDSHIRE

by the current, sometimes to the depth of a hundred feet or more, since the gravels of which the implements formed constituent parts had been deposited. To distinguish this more ancient Stone age from that which was both better known and more recent, the term 'Palæolithic' was applied to it by Sir John Lubbock (now Lord Avebury), while the more recent Stone age was designated the 'Neolithic.'

Others preferred the terms 'River-drift period' and 'Surface Stone period.' The relics characteristic of a transition from one period to the other, though occasionally asserted to have been found, have not as yet had their existence satisfactorily established; and in England, at all events, there seems to be a great gulf fixed between the two periods.

This is not the place in which to enter into the geological features of the question; but it may be mentioned that the beds containing Palæolithic implements seem in some cases to be of lacustrine rather than of fluviatile origin, and that from time to time implements are found upon the surface, probably in consequence of the containing beds having been denuded by the action of rain.

The principal Palæolithic forms are 'flakes,' often of large size, and oval, ovate, and pointed implements, usually from about three to six or seven inches in length. The flakes, which generally show three or four facets on the more convex face, have been detached from blocks of flint by means of a single blow, and seem to have served as knives or as scraping tools.

The larger implements have been trimmed into shape by a succession of blows administered at their margins, each blow detaching a flake or splinter. They seem to have been employed for all purposes, and to have been held in the hand, and not mounted on any handle or shaft, though some of them look as if they might have been readily converted into spear-heads. For their general character and theories as to their age¹ other works must be consulted.

The discoveries of Palæolithic implements within the county of Hertford have been numerous, and some of them have been made under peculiarly interesting circumstances. It will be well to consider them in somewhat geographical order, taking the districts comprised within the watersheds of the rivers Colne and Lea as the two main divisions.

The first recorded discovery of the kind within the county was made by myself in the year 1861,² when I found a Palæolithic implement in a ploughed field near Bedmond, in the parish of Abbot's Langley. It is of the pointed triangular form, but it has lost its point, and although found lying on the surface, it was probably derived from a bed of red brick-earth in the immediate neighbourhood. The spot where it lay is about half a mile to the west of Bedmond and about 160 feet above the level of the Gade at its nearest point. It is, however, near the bottom

¹ Evans, *Ancient Stone Implements*; Lubbock, *Prehistoric Times*; Dawkins, *Early Man in Britain*, etc., etc., etc.

² *Archæologia*, xxxix. p. 73; Evans, *Ancient Stone Implements*, 2nd ed. p. 596; *Tram. Herts Nat. Hist. Soc.*, vol. viii. p. 182.

THE PREHISTORIC PERIOD

of a lateral valley leading into the main valley of the Gade—itself an affluent of the Colne—between Boxmoor and Watford. In 1892 I found another smaller implement of ovate form, which lay among some stones placed in a rut at Bedmond Hill.¹ In a ploughed field near Hart Hall Farm, about midway between these two localities, I found in 1885 what seems to be the point of a Palæolithic implement, not made of flint, but of a hard Tertiary sandstone. There is, of course, no geological evidence as to the position which these implements originally occupied ; and the same may be said with regard to two ovate specimens which I found in gravel laid on the towing-path of the Grand Junction Canal, with which at this spot the Gade is incorporated, between Apsley and Nash Mills, about two miles south of Hemel Hempstead.

Other specimens are reported to have been found near the head of the tributary valley of the Bulbourne near Wigginton, to the south-east of Tring.

Farther to the west, in the valley of the Misbourne, another affluent of the Colne, a good specimen was found in 1891 in digging for the foundation of the bridge over the Metropolitan Extension Railway, just north of Great Missenden.² This, however, is in Buckinghamshire, and not in Herts.

Returning to the valley of the Colne, it is recorded that on its left bank, near Bushey Park,³ close to Watford, several Palæolithic implements of various forms have been found in gravel, about 40 feet above the existing stream.

Between Watford and St. Albans the Colne receives the waters of the Ver, the source of which in very wet seasons is but a few miles distant from that of the Lea ; and in the district around Kensworth and Caddington most interesting discoveries have been made by Mr. Worthington G. Smith. They are fully described in his book entitled, *Man the Primeval Savage*,⁴ so that it is not necessary to give more than a *résumé* of them. At Kensworth itself nothing more than a few Palæolithic flakes have been found, but all around Caddington, on the high ground two or three miles north of the source of the Ver, and just outside the present boundary of the county, Mr. Smith has been fortunate enough to discover a large number of relics of Palæolithic man. They occurred for the most part in the pits worked for brick-earth, and present various recognized forms of Palæolithic flint implements, including some round-edged scrapers.

Not only did he find the implements, but he also found the original land-surface on which those who made them worked. He found their stores of unworked flints, the refuse chips and flakes resulting from the manufacture, the waste, broken and unfinished implements, and he was

¹ *Trans. Herts Nat. Hist. Soc.*, vol. viii. p. 183, pl. xi. 8.

² Evans, *Ancient Stone Implements*, 2nd ed. p. 596.

³ *Op. cit.* p. 597 ; *Trans. Herts Nat. Hist. Soc.*, vol. viii. p. 182.

⁴ Stanford, London, 1894. See also *Nature*, 1889, xl. pp. 15, 181 ; Evans, *Ancient Stone Implements*, 2nd ed. p. 598 ; *Trans. Herts Nat. Hist. Soc.*, vol. viii. p. 184.

A HISTORY OF HERTFORDSHIRE

moreover able, by bringing fragments of flint together, to reconstitute the original blocks out of which implements had been chipped. The occupation by man of the 'Palæolithic floor' must have extended over a long space of time, and Mr. Smith thinks that two series of implements may be distinguished. The contorted beds of brick-earth in and below which they are found seem to belong to a more recent date than the Glacial period, during which the boulder clay of this part of England

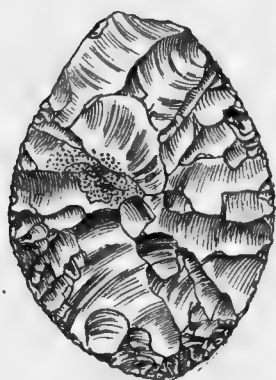


FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

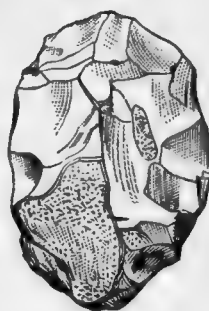


FIG. 5.



was deposited. Specimens of the implements from the Caddington district are shown above in figs. 1 to 5.

There are at present no more Palæolithic discoveries to record from the basin of the Colne ; but it may be mentioned that I have a flake from the brick-earth at Barnard's Heath near St. Albans, which has the appearance of belonging to Palæolithic times, so that a further search upon the spot might lead to more conclusive results. I have also recorded the finding of an implement at North Mimms,¹ but possibly there may be some mistake in the matter.

We must now consider the watershed of the Lea and its tributaries so far as Hertfordshire is concerned. A passing reference only need be

¹ *Proc. Soc. Ant.*, 2nd ser. vol. v. p. 165.

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made to the discoveries near its source in Bedfordshire,¹ but at Harpenden² and Wheathampstead, nine or ten miles down the stream, Mr. Worthington Smith has found ochreous flakes of Palæolithic character. At No Man's Land Common,³ near the latter place, more conclusive specimens in the shape of ovate implements have been found. Two of these are in the County Museum at St. Albans. The gravels at this spot were in all probability deposited by the river Lea before it took its present course by Wheathampstead.

Near Ayot St. Peter⁴ and Welwyn, Mr. Worthington Smith has found flakes only; but some discoveries at Welwyn will subsequently be mentioned. No further discoveries are recorded within the valley of the Lea until we arrive near Hertford. General Pitt Rivers has a very fine Palæolithic implement, stated to have been found near Bayford,⁵ on the southern side of the river. At Hertford, Bengoe, Ware and Amwell implements of pointed form have been found by Mr. Worthington Smith.⁶ He has also obtained them from the gravels at Flamstead End, Cheshunt.⁷ A few have also been found at Hoddesdon. His numerous and important discoveries lower down the valley of the Lea, in the counties of Middlesex and Essex, are well known, and need not here be dilated upon.

Among the affluents of the Lea, the Beane may first be mentioned. Its present source is near Stevenage. To the north of the town, at Fisher's Green,⁸ Palæolithic implements have been found in brick-earth. Mr. W. Ransom, F.S.A., has specimens also from Ippolit's to the north-west. Others have been found in a brickfield south of Stevenage.⁹ In gravels exposed in a cutting of the Great Northern Railway near Knebworth¹⁰ and in a clay pipe exposed farther south, near Welwyn tunnel, some well-formed pointed and ovate implements have been found, which were brought to my knowledge by the late Mr. Frank Latchmore. The discoveries at Hitchin will be subsequently mentioned.

Mr. R. W. Brabant has a well-formed ovate implement said to have been found in the valley of the Rib near Buntingford.

In the valley of the Stort, an important affluent of the Lea, which joins it near¹¹ Hoddesdon, a few discoveries of Palæolithic implements have been made. At Stocking Pelham¹² Mr. W. H. Penning, F.G.S.,

¹ Evans, *Ancient Stone Implements*, 2nd ed. p. 598; *Man the Prim. Savage*, p. 176.

² *Man the Prim. Savage*, pp. 90, 180; *Ancient Stone Implements*, 2nd ed. p. 601.

³ *Ancient Stone Implements*, 2nd ed. p. 601; *Man the Prim. Savage*, p. 180; *Trans. Herts Nat. Hist. Soc.*, vol. viii. p. 183, pl. xi. 4, xiii. 7.

⁴ *Man the Prim. Savage*, p. 184.

⁵ *Archæol.*, vol. liii. p. 254.

⁶ *Man the Prim. Savage*, p. 184; *Journ. Anthropol. Inst.*, 1879, viii. p. 278; *Nature*, vol. xxiii. p. 604; *Ancient Stone Implements*, 2nd ed. p. 602.

⁷ *Man the Prim. Savage*, p. 185.

⁸ *Ancient Stone Implements*, 2nd ed. p. 602; *Trans. Herts Nat. Hist. Soc.*, viii. pl. xi. 3, i. p. lxi.

⁹ *Ancient Stone Implements*, 2nd ed. p. 602; *Trans. Herts Nat. Hist. Soc.*, viii. pl. xi. 5.

¹⁰ *Ancient Stone Implements*, 2nd ed. p. 602.

¹¹ *Op. cit.* p. 602; *Trans. Herts Nat. Hist. Soc.*, viii. p. 184.

¹² *Ancient Stone Implements*, p. 602.

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found in 1872 an ochreous, water-worn, oval implement, and at a somewhat earlier date two other examples, one about a mile north of Bishop's Stortford, and the other farther north still, close to Pesterford Bridge, in Essex.

The site of the Palæolithic discoveries at Hitchin hardly lies within the watershed of the Lea, but is near the source of the Hiz, a stream that flows northward to join the Ouse. The implements were first discovered here about the year 1876 by a workman who had seen a woodcut of a specimen from the valley of the Somme in an illustrated periodical, and who at once recognized the identity of form between the worked flints from France and some which he had come across in the course of his work, digging clay for the manufacture of bricks at Hitchin. Attention was first called to them at a field meeting of the Watford Natural History Society in June, 1877.¹ Since that time numerous implements, including large flakes, have been found in more

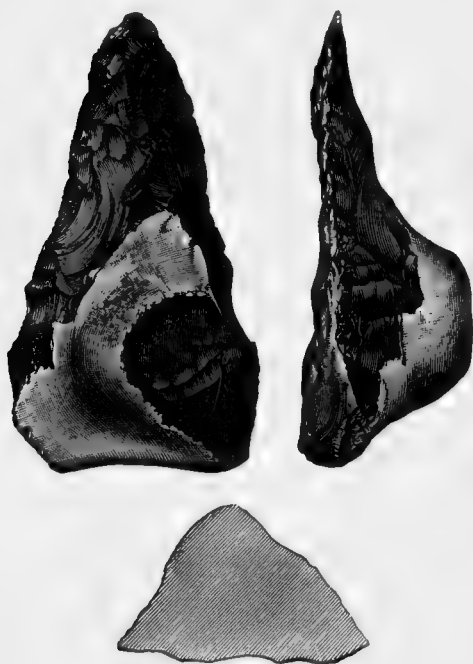


FIG. 6.

than one of the clay-pits near Hitchin, presenting various forms, among which, however, the pointed type predominates. A specimen is represented in fig. 6. In 1896 an investigation of the geological conditions of the deposits was undertaken at the cost of the British Association and the Royal Society, and was carried on by Mr. Clement Reid, F.R.S., who prepared a careful report upon the subject, published in the *Proceedings of the Royal Society*.² The alluvial beds, which are of freshwater origin, present close analogies with those of Hoxne in Suffolk, which have also been exhaustively examined by Mr. Reid, and lie above the chalky boulder clay of the district. The deposits beneath the Palæolithic brick-earth fill a deep channel and contain a

temperate flora, including such trees as the oak, ash, cornel, elder and alder; and among the mammalian remains in the brick-earth are bones of rhinoceros, hippopotamus, and mammoth. The whole surface of the surrounding country has been so much modified by denudation subsequently to the formation of the implement-bearing beds, that it is difficult to form an idea as to whence the water from which they were deposited came, or whither it flowed.

¹ *Trans. Watford Nat. Hist. Soc.*, vol. i. p. lxi.; *Ancient Stone Implements*, 2nd ed. p. 536; *Trans. Herts Nat. Hist. Soc.*, viii. pls. x. and xii.

² Vol. lxi. (1897), p. 40; *Proc. Geol. Assoc.*, xiv. (1896), p. 417.

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At Ickleford,¹ to the north of Hitchin, several Palæolithic implements have been found in gravels lying in the valley of the Hiz. I have likewise a pointed specimen from Bearton Green,² also to the north of Hitchin, but in an angle between the rivers Oughton and Hiz.

In a summary account such as this, it has not appeared expedient to enter fully into the geological features of each discovery, or to describe minutely the character of each implement. The references given in the notes will in most cases enable the reader to obtain more detailed information, should he desire to have it.

THE NEOLITHIC PERIOD

Between the Palæolithic or River-drift period that we have been considering, and the Neolithic or Surface Stone period that now demands our attention, there exists—in this country, at all events—a gap of unnumbered years, which, as already remarked, it has been found impossible to bridge over in any satisfactory manner. At the same time, it seems almost equally impossible to fix even an approximate date for the advent of Neolithic man; and with regard to many of the stone implements of which he made use, any chronological arrangement seems hopeless. It is, however, probable that some of the hatchets, merely chipped into shape and not ground or polished, may be of earlier date than those which are polished, though tools and weapons of both kinds may have been, and probably were, in use side by side through many successive generations. It also seems almost certain that some of the more highly finished forms, and especially those in which a perforation for the haft has been made, belong to the close of the Neolithic period, if not indeed to the commencement of that of Bronze. During this latter period flint arrow-heads were in common use, and flint scrapers were employed for producing fire from pyrites, if not also for the preparation of skins; while even in Roman times flints were chipped into form for the armature of the *tribula* or threshing sledges. Flints more or less carefully chipped into shape were commonly employed not more than fifty years ago for ‘striking a light’ by means of a piece of steel or iron and tinder, and the manufacture of gun-flints still survives, notwithstanding the introduction of numerous varieties of percussion guns.

In considering the antiquities formed of flint and other stones, and found in this country, it will therefore be best to classify them according to their form and character, and to adopt some such arbitrary arrangement as that which I have followed in my ‘Ancient Stone Implements, Weapons and Ornaments of Great Britain.’

Chipped or rough-hewn Celts or Hatchets.—These are probably much more abundant in the county, especially on its western side, than is commonly supposed. Where the whole surface of a field is thickly strewn

¹ *Ancient Stone Implements*, 2nd ed. p. 536; *Trans. Herts Nat. Hist. Soc.*, viii. p. 184, pls. xi. 6, xii. 5.

² *Trans. Herts Nat. Hist. Soc.*, viii. p. 184, pl. xi. 2.

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with splintered and fractured flints, it requires a practised eye to discern among them those which have been more or less chipped into shape by the hand of man. Within the parish of Abbot's Langley¹ alone I have found six or eight roughly chipped flint hatchets, some of them of symmetrical form. A rough celt found by Mr. Percy Manning, F.S.A., at Bedmond in this parish, has been presented by him to the County Museum. Mr. Worthington Smith has in like manner found specimens at Kensworth² and Wheathampstead. One has also been found near Ware,³ and I have a thin flattish example $5\frac{1}{2}$ inches long, found by Mr. W. Whitaker, F.R.S., at Merkyate Street in 1863. Mr. Marlborough Pryor has collected celts of this character and other forms of Neolithic date at and near Weston.

Celts ground at the edge only.—There is at present but one specimen of this kind to record.⁴ This was found in 1871 by myself in a field of my own in the angle formed by the Hyde Lane and the London and North-Western Railway, in the parish of Abbot's Langley. The edge has been intentionally blunted, so that it may have served as a weapon rather than as a tool.

Polished Celts.—A fine example of this character, $7\frac{1}{2}$ inches long, found at Panshanger, was exhibited to the Archæological Institute in 1863, and has been figured in the *Archæological Journal*.⁵ It is of light-coloured flint carefully ground over the whole of its surface, and with the sides slightly flattened by grinding. The central part of a flint celt of the same kind found on King's Langley Common by Mr. Percy Manning, F.S.A., has been given by him to the County Museum. A narrower and thicker celt, $6\frac{3}{4}$ inches long, also of flint, was found at Albury⁶ near Bishop's Stortford. Mr. A. E. Gibbs has a flint hatchet, $4\frac{1}{2}$ inches long and $2\frac{1}{4}$ inches wide, ground all over, and found at Ashwell. I have a highly finished hatchet made of a black basaltic rock and polished all over, which was found at Duckland,⁷ between Hitchin and Pirton. It is $4\frac{1}{2}$ inches long and about 2 inches wide. The sides are partially flattened.

I have a small flint chisel or pick, or possibly an arrowflaker, found near Baldock⁸ by Mr. W. Whitaker, F.R.S. Mr. A. E. Gibbs has a flint chisel, $4\frac{5}{8}$ inches long, found at Digswell Hill.

Perforated Axes, Hammers, etc.—As a rule the implements of this character belong to the close of the Neolithic or the beginning of the Bronze period. A perforated adze or hoe, formed of a dark grey grit, found at Welbury,⁹ near Offley, is in the collection of Mr. W. Ransom, F.S.A., of Hitchin, and has been figured. It is about 5 inches long and $2\frac{3}{4}$ inches broad. A small perforated hammer-head made from a quartzite

¹ *Ancient Stone Implements*, 2nd ed. pp. 70, 77; *Trans. Herts Nat. Hist. Soc.*, viii. pl. xi. 1.

² *Man the Prim. Savage*, p. 307.

³ *Ancient Stone Implements*, 2nd ed. p. 70.

⁴ *Op. cit.* p. 87.

⁵ Vol. xx. p. 193; *Ancient Stone Implements*, 2nd ed. p. 101.

⁶ *Ancient Stone Implements*, 2nd ed. p. 100.

⁷ *Op. cit.* p. 114.

⁸ *Op. cit.* p. 177.

⁹ *Trans. Herts Nat. Hist. Soc.*, viii. p. 175.

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pebble was found at Sandridge¹ near St. Albans, by the Rev. Dr. Griffith, and is now in the British Museum. Another formed from a sandstone pebble, $4\frac{1}{2}$ inches long, was found near Ware.²

Flint Flakes, Cores, Scrapers, etc.—The same remarks that have been made with regard to roughly chipped celts apply to these forms, which are, in fact, much more abundant in the county than the published accounts of their discovery would seem to indicate. I have found flakes, cores and scrapers on the surface in many parts of the parish of Abbot's Langley, and I have no doubt that many other parts of the county would prove equally prolific. They are often so rudely made that it seems hardly worth while to preserve them, and, moreover, there is in most instances a difficulty in assigning a date to them. One of those from Abbot's Langley³ is undoubtedly Neolithic, as it has the edge ground so as to form a knife. A flat flake, trimmed at the end into a scraper-like form and found near Hitchin,⁴ has been figured. Scrapers have been found at Abbot's Langley, Braughing, Rickmansworth, St. Albans and elsewhere.

I have a large curved flake, 6 inches in length and $1\frac{1}{2}$ inch in extreme breadth, found near Royston. It has both ends trimmed into a semicircular form, and is also trimmed along each side.

A kind of pointed oval knife, sharp at the edge all round, but not ground, has been found near Ware.⁵

Arrowheads.—The earliest and perhaps the most interesting recorded discovery of these objects in Hertfordshire was made about the year 1763 at the Grove,⁶ the seat of Mr. Seare, near Tring. Some labourers sinking a deep ditch or drain at a depth of seven feet came across a human skeleton with the legs and arms extended. Between the legs were some barbed flint arrowheads, in outline like a Gothic arch, and at the feet

two 'bracers' or arm-guards for archers, 'convex on one side and concave on the other, polished, and of a greenish cast.' There was also a large jet ring, grooved and perforated at the edge, and an earthen urn.

Rather more than a hundred years after this discovery I found in 1866 a flint arrow-head of the same character as those from Tring Grove on the surface of a field at the foot of the chalk escarpment between



FIG. 7.



FIG. 8.

the surface of a field at the foot of the chalk escarpment between

¹ *Trans. Herts Nat. Hist. Soc.*, viii. p. 174.

² *Ancient Stone Implements*, 2nd ed. p. 228.

³ *Op. cit.* 2nd ed. p. 291; *Trans. Herts Nat. Hist. Soc.*, viii. p. 175.

⁴ *Op. cit.* viii. p. 177.

⁵ *Ancient Stone Implements*, 2nd ed. p. 334.

⁶ *Archæol.*, viii. p. 429, pl. xxx.; *Ancient Stone Implements*, 2nd ed. pp. 383, 398, 426, 456; Cussans, *Hist. Herts*, iii. p. 13; *Trans. Herts Nat. Hist. Soc.*, viii. p. 178.

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Tring and Eddlesborough. It is engraved as fig. 315 in *Ancient Stone Implements*, and here reproduced in fig. 8.

A remarkably fine barbed arrowhead with straight sides from Ashwell, found in 1881, is represented in fig. 305A of the same book, and here in fig. 7. A smaller example from Ashwell¹ has also been figured. I possess a well-formed example of the same type, but of larger size, found at Hunsdon² near Ware.

In my collection are also a pointed leaf-shaped arrowhead (like fig. 281) from Pirton, and a tanged arrowhead without barbs, 2½ inches long (like fig. 302), from Royston.

Fabricators.—These instruments, to which the name of arrow-flakers has also been applied, seem to have been used either in the hand to detach small flakes in the manufacture of arrowheads or other small appliances by means of direct pressure, or else as punches through which an impact could be communicated from a mallet or hammer. Their worn and bruised ends testify to their having performed hard work. A specimen possibly belonging to this class, and found near Baldock, has already been mentioned, and Mr. Worthington Smith has figured a more characteristic specimen of a Neolithic fabricator in his work *Man the Primeval Savage*. It was found at Caddington,³ and, in Mr. Smith's opinion, was made from a Palæolithic flake, the older portions of the surface having a white *patina*, while the more recent are black, the original colour of the flint.

THE BRONZE PERIOD

Following on the Neolithic stage of culture, and, indeed, gradually developed from it, comes a period when metal to a great extent superseded stone as a material for tools and weapons. It seems probable that in some, if indeed not in several, countries of the world copper was the metal first used for such purposes, and that there was in those countries what has been termed a Copper age, as distinct from a Bronze age. There exists, however, in Britain but little evidence of such a period, though in Ireland, according to the views of some antiquaries, it may have been otherwise. At an early stage in the annals of metallurgy it appears to have been discovered that a comparatively slight admixture of tin with copper not only rendered it more fusible and better adapted for being cast in a mould, but that the alloy thus obtained was susceptible of being drawn out to a sharper and more durable edge.

Typical bronze consists of nine parts of copper and one of tin, and this alloy received in later days the name of bronze, from the town of Brundisium, or Brundisium (now Brindisi), where a commerce in this metal appears to have been carried on. Analysis of ancient bronze tools and weapons shows a considerable variation in the proportion of tin to copper, and occasionally lead is present in appreciable quantity, even to the extent of 8 per cent.

¹ *Trans. Herts Nat. Hist. Soc.*, viii. pl. xii. 1.

² *Ancient Stone Implements*, 2nd ed. p. 389.

³ *Op. cit.* 2nd ed. p. 304, fig. 219.

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As was found desirable with the relics of the Neolithic period, it seems best to treat those of the Bronze period in accordance with their forms, rather than attempt any chronological arrangement,¹ although it seems possible to divide the period in Britain into an earlier and a later stage. Regarding it as a whole, we cannot well assign to it a less duration than eight or ten centuries, and if iron, as seems probable, was already in use in southern Britain in the fourth or fifth century B.C., the beginning of the Bronze period in this country may, with some degree of certainty, be placed at about 1200² or 1400 years B.C. In a separate work I have treated³ of 'The Ancient Bronze Implements, Weapons, and Ornaments of Great Britain and Ireland,' and, in noticing the bronze antiquities found in Hertfordshire, it will be convenient in many cases to refer to figures in that book, instead of minutely describing the forms.

Flat Celts.—Of the earliest forms of bronze—the flat celt, or hatchet, in form much like some of those made of stone, and the small knife-dagger—I have not at present met with any examples in Herts. In Wilts and Yorkshire these forms have generally been found accompanying interments in barrows, and sometimes associated with battle-axes formed of stone.

In a barrow in Therfield⁴ parish, called Fylers or Money Hill, opened about 1855 by the late Mr. Joseph Beldam, F.S.A., there were found, about two feet from the bottom of the mound, and a good way in the interior, thirteen bars of metal hammered square, about $4\frac{1}{2}$ inches long, varying in weight from about $3\frac{1}{4}$ ounces to $5\frac{1}{4}$ ounces, together with a small copper tool. They proved on analysis to contain 98 $\frac{1}{2}$ per cent. of copper, and a small quantity of tin or antimony, probably the latter. Unfortunately, these bars were not found by Mr. Beldam, but by the tenant of the land, who cut away the mound, and used its soil as a top-dressing. The evidence as to the age of these bars is therefore incomplete, but they not improbably belong to the Bronze period.

About 1830, another barrow near the Thrift⁵ in the same parish was opened. But little is known of its contents, which consisted of pottery and other objects reputed to be Roman.

Winged Celts and Palstaves.—A certain number of palstaves, a kind of narrow hatchet with a tang, intended to be hafted with a part of the wooden haft on either side of the tang, have been found in Hertfordshire. One $6\frac{1}{4}$ inches long, with a deep stop-ridge and midrib, was found in Park Wood near Knebworth in 1880, and is in the collection of Mr. W. Ransom, F.S.A. In outline it resembles fig. 60 in *Ancient Bronze Implements*. Another in the same collection, with deep stop-ridge and two ribs below, and with loop at the side, was found near Ashwell, 1889. It has lost part of its tang, but is still $4\frac{1}{2}$ inches long.

¹ *Proc. Soc. Ant.*, 2nd ser., v. p. 412. ² Evans, *Ancient Bronze Implements*, p. 473.

³ London, Longmans, 1881. See also *Trans. Herts Nat. Hist. Soc.*, viii. p. 1.

⁴ *Proc. Soc. Ant.*, 2nd ser., i. p. 306; *Archæol. Journ.*, xviii. p. 86; *Ancient Bronze Implements*, p. 424.

⁵ Cussans' *Hist. of Herts*, i. (Odsey), p. 116.

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A winged palstave with loop was found in the hoard at Cumberlow, near Baldock, about to be mentioned, and an outline of it has been figured.¹

Socketed Celts, etc.—Several instruments of this kind have been found in Hertfordshire. In the collection of Mr. W. Ransom, F.S.A., is an example 4 inches long, ornamented with three vertical ribs on each face (like *A.B.I.*, fig. 124), found at Knebworth in 1897. I have a specimen, 4½ inches long (like *A.B.I.*, fig. 133), but with four ribs only on each face, found near Royston in 1882. I have also a long, narrow celt, 5 inches long, and 1½ inch wide at the edge (in form like fig. 148, but plain), found at Hitchin in 1896. In most instances these celts seem to have formed part of founders' hoards, inasmuch as they were accompanied by fragments of bronze tools and lumps of rough metal.

In December, 1851, a plain socketed celt, 3 inches long (like fig. 114, *A.B.I.*), the fragment of another, and about 4 lb. in weight of rough lumps of metal, were found in a ploughed field near Westwick Row,² in the parish of St. Michael's, St. Albans.

About 1853, some socketed celts, for the most part either damaged or imperfectly cast, were found with lumps of metal at Danesbury,³ near Welwyn, and were exhibited to the Archæological Institute by Mr. William Blake. A similar hoard from Furneaux Pelham⁴ was formerly in the collection of the Hon. Richard Neville, afterwards Lord Braybrooke.

The most important hoard of this kind found in the county is, however, that unearthed at Cumberlow Green,⁵ Rushden near Baldock, in 1876. There some labourers while draining came across 'a neatly made, well-shaped hole about 2 feet in diameter; and at about 2½ feet below the surface, in stiff red loam,' found about forty instruments of bronze, some of them perfect, but others broken or much battered. 'They lay at the bottom of the hole with about 50 lb. of metal, all of the same description partially fused.' Among the implements was the winged palstave already mentioned, a socketed and looped celt, ornamented with two curved ribs on each face (3¾ inches long, somewhat like figs. 111, 113), another of octagonal section (4 inches long, like fig. 176), apparently another of the same character without a loop, and fragments of a sword and of a dagger. The three last mentioned are figured in the *Journal of the Anthropological Institute*.⁶ Many of the objects from this 'find' are in the collection of Mr. William Ransom, F.S.A.

Daggers and Swords.—The fragment of a dagger from Cumberlow Green is like the lower half of fig. 312, *A.B.I.*, but has four rivet-holes in it. The portion of a sword consists of part of the hilt with the base of the blade. There are four rivet holes in it, two on each side of a

¹ *Journ. Anthropol. Inst.*, vi. p. 195.

² *Arch. Journ.*, xi. p. 24; *Ancient Bronze Implements*, pp. 112, 424, 468.

³ *Arch. Journ.*, x. p. 248, xi. p. 24; *Ancient Bronze Implements*, 423.

⁴ *Arch. Journ.*, x. p. 248.

⁵ *Journ. Anthropol. Inst.*, vi. p. 195; *Trans. Herts Nat. Hist. Soc.*, iv. p. 40; *Ancient Bronze Implements*, pp. 94-110, 134, 424, 467.

⁶ vi. p. 195.

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central rib, which was probably carried along the blade. The edges seem to have been removed just above the hilt, and the general type of the sword appears to have been more like a French form than any of those usually found in Britain.

Spear-heads, Lance-heads, etc.—A plain socketed spear-head is engraved in Skelton's *Meyrick's Ancient Armour*¹ among 'Antient Britannie arms of Bronze,' and described as 'the head of a hunting-spear dug up in Hertfordshire.' The 'bronze spear-head, about 2 feet in length,' described by Cussans² as having been found in 1874 in a trench at Hoddesdon near Broxbourne, may have been a sword.

That described by the late Rev. Thomas Hugo, F.S.A.,³ as having been found in May, 1858, in the river Lea, a short distance above the village of St. Margaret's in Herts, is now in my own collection. It is 7 $\frac{3}{4}$ inches long, in form like *A.B.I.*, fig. 382, perfectly plain, and with a rivet-hole through the socket to secure the shaft.

The only other bronze instrument that I need mention is a small curved knife, with the handle and blade in one piece, the former ending in the head of an animal. It is about 3 $\frac{1}{4}$ inches long, and is engraved as fig. 259, *A.B.I.*, and here in fig. 9. It was found at Wigginton⁴ near Tring. It not improbably belongs to the late-Celtic period, rather than to that of the Bronze.



FIG. 9.

Two bracelets of gold probably belonging to the Bronze age, were found at Little Amwell.⁵ A plain gold torque, slightly expanding at the ends, and weighing 13 oz. 15 dwt., was found about the year 1800 near⁶ Mardox, about two and a half miles from Ware. Owing to the mischievous operation of the law of treasure-trove it was melted down.

THE LATE-CELTIC PERIOD

This term was applied by the late Sir Augustus Wollaston Franks as an equivalent to the 'Early Iron age' of continental antiquaries, inasmuch as in Britain it coincided in the main with the arrival of the Celtic tribes from the north-west of Europe, who developed a peculiar stage of civilization, of which more characteristic traces are to be found in Britain than in Gaul and the north-western parts of Europe. The peculiar style of decoration founded on segments of circles and on spiral ornaments stands apart from that of earlier periods, though it subsequently became more highly developed in the early Christian days of Ireland and Britain, when, however, interlaced ornaments superseded the simpler curves of former times.

¹ 1830, pl. xlvii. 10; *Ancient Bronze Implements*, p. 314.

² *Hist. Herts*, ii. p. 173.

³ *Proc. Soc. Ant.*, iv. 279; *Ancient Bronze Implements*, p. 315.

⁴ *Proc. Soc. Ant.*, iv. p. 254; *Ancient Bronze Implements*, p. 214.

⁵ *Archæol.*, xviii. p. 446.

⁶ *Gents. Mag.*, 1800, vol. lxx. 2, p. 817, pt. 3.

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It seems probable that the use of iron was introduced into southern Britain not later than the fourth or fifth century B.C., and that by the second or third century B.C. the employment of bronze for cutting instruments had practically ceased. The Britons with whom Julius Cæsar came in contact had, no doubt, iron or steel weapons, and were on the whole as highly civilized as the Gaulish tribes on the continent, with whom they were so closely related. They carried on a considerable commerce, and were acquainted with the art of coining, which, as we shall subsequently see, was practised by the British rulers of Hertfordshire upon an extensive scale.

It would be out of place here to enlarge upon the sword-sheaths, mirrors and shields, the decorations of which are very characteristic of the late-Celtic period, inasmuch as none of them seem to have been found in Hertfordshire. The actual relics that may be claimed for the county are but few.

A bronze knife from Wigginton has already been mentioned, and in the same parish what seems to be the linch-pin¹ of a chariot was found in the year 1867. Its total length is about $4\frac{1}{4}$ inches. The central part consists of a slight square bar of iron with bronze terminals at either end. At the upper end is a spherical knob of bronze, decorated with groups of three small projecting pellets, and having a small perforation through it; beyond this is a disc with moulded circumference, and adorned at the flat end with three projecting knobs joined by curved ribs. At the other end the bronze is in the shape of the forefoot of a horse, with the fetlock joint bent.

Another relic of late-Celtic date was found on the same side of the county in a water-cress ditch at Broadway² near Bourne End, in the parish of Northchurch, about the year 1867. It is the fragment of a blade of an iron sword still preserved within a plain bronze sheath, and is now deposited in the British Museum.

A bronze enamelled armlet, said to have been found at Verulam,³ exhibited to the British Archæological Association in 1874, was thought by Mr. Syer Cuming to be 'Keltic, and that it might have been brought into this country from Ireland.' Though it is stated to be 'certainly of a very rare type,' no description of it is given.

Pottery belonging to the late-Celtic period has been found near Hitchin.⁴

A bronze helmet⁵ found at the same place and now in the Museum at Colchester may not improbably be of late-Celtic date. Another bronze helmet found at Northcot Hill near Tring is of much the same character, and now in the British Museum; it has been figured in the *Vetusta Monumenta*.⁶ Both have been commented upon by the late Sir A. Wollaston Franks.

¹ *Proc. Soc. Ant.*, 2nd ser. iv. p. 63.

² *Archæol.*, xlv. p. 254, liii. p. 247.

³ *Brit. Arch. Assoc. Journ.*, xxx. p. 92.

⁴ *Proc. Soc. Ant.*, xiii. p. 16; *Arch. Journ.*, xxxix. p. 426; *Brit. Arch. Assoc. Journ.* xlii. p. 422.

⁵ *Proc. Soc. Ant.*, 2nd ser. v. p. 362.

⁶ Vol. v., pl. 26, 27; *Horæ Ferales*, p. 170.

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As already observed the indigenous coinage of this country, belonging to a period anterior to the complete subjugation of Britain by the Romans, is well represented in Hertfordshire. Before considering the coins themselves, and the light that they throw upon history, it will be well to say a few words as to the origin of the art of coinage and the course of its introduction into Britain, although I have treated of the whole subject in great detail elsewhere.¹

Coins, that is to say pieces of metal of a certain weight and fineness guaranteed by a duly authorized stamp, were first issued in Greece and Asia Minor not earlier than the seventh century B.C., and for a long period they were in the main confined to silver, bronze, and electrum, an alloy of gold and silver. About the year B.C. 356 Philip II. of Macedon, acquired the rich gold mines of Crenides (or Philippi), and shortly afterwards issued gold coins to the value of nearly £250,000 annually. These coins, which weighed about 133 grains troy each, were known as Philippi and were diffused through the whole of Greece and her colonies, while barbarians who came in contact with Greek civilization seem to have seized upon them as objects for imitation. In Gaul, on the Mediterranean coast of which were several Greek colonies, this seems to have been especially the case; and the whole of the early gold coinage of that country may be said to consist of imitations more or less rude and degenerate of the Macedonian Philippus.

The types of the Philippus, as will be seen from the annexed wood-cut—are on the obverse the laureate head of Apollo, and on the reverse a charioteer in a biga with the name of Philip underneath. The earliest of the Gaulish imitations follow the prototype pretty closely, but eventually both the head and the biga become completely transformed.

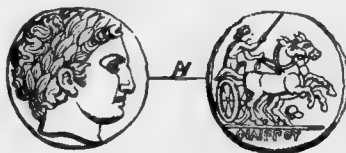


FIG. 10.

By the time that the art of coining had reached the north-west shores of Gaul, and had thence passed over into Britain, the original Philippus had been developed into the coin of which two varieties are shown below.

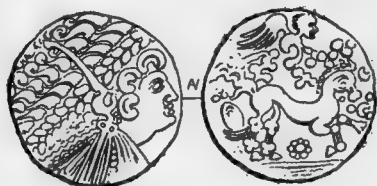


FIG. 11.

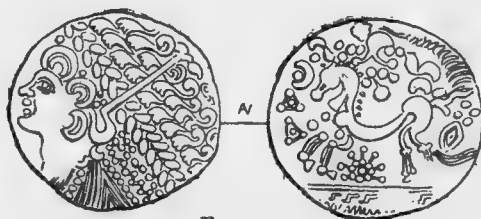


FIG. 12.

The size of the piece has increased, a crossbar, ending in a hook, and rich drapery on the neck have been added to the head; the hair of which has in front been converted into hollow crescents, and at back ranged in two symmetrical rows, while the laurel wreath becomes an important feature in the design. On the reverse the two horses have

¹ *The Coins of the Ancient Britons*, 1864, with Supplement, 1890. Quaritch: London.

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The name of the king appears but rarely in an extended form upon his own coins ; but on those of his son Cunobelinus it is sometimes given at full length. Both he and Epaticcus were proud of being the sons of their father, and make use of Tasciovani filius in some abbreviated form as a title of honour. On No. 1 of the coins in the plate the name of TASCIOVAN is given at full length, on No. 3 the spelling TAXCI occurs, and on No. 2 is seen the form TASCIAV, with an A instead of the O, a form which not unfrequently appears on his coins in silver and copper.

Nos. 13 to 24 on Plate i. show the silver coins of Tasciovanus, all of which, with the exception of No. 23, were probably struck at Verulam. On Nos. 13 and 14 the name of the town, in an abbreviated form VER, occupies the post of honour on the obverse, the name of the king being, in the case of No. 14, entirely absent. On No. 15 the cruciform ornament, the direct but almost unrecognizable descendant of the head of Apollo on the Macedonian Philippus, is to be seen. In the angles are the letters VERL. In the nearly corresponding small gold coin No. 9, the fourth letter is an O, unless possibly it is merely a kite-shaped ornament. The boar of the reverse occurs also on some of the copper coins of Verulamium.

The coins with TASC on a tablet, Nos. 16, 17, are closely connected with the small gold coin No. 7, but the horseman on the reverse of No. 16 seems more nearly allied to the warrior on the coin struck at Riconium, No. 12.

The type of the coin No. 16 is manifestly copied from that of a denarius of the Emperor Augustus struck between B.C. 12 and B.C. 10. It probably belongs to the latter part of the reign of Tasciovanus.

The art displayed on Nos. 19 and 22 is of no contemptible order, and the dies for these coins were probably engraved by a foreign artist. The eagle occurs on the small copper coins of Verulamium, Pl. ii., No. 24, and in a somewhat different attitude on the silver coins of Epaticcus the son of Tasciovanus. The Pegasus is seen on other coins of this king, and the griffin, which can hardly be regarded as indigenous to Britain, is to be found on many coins of Greek and Roman origin, and seems to be significant of a foreign engraver having been employed to produce the dies. The three concentric circles, that in the centre being beaded, suggest the possibility of Nos. 16, 22 being the work of the same artist.

Nos. 20, 21 seem also to be the products of the same engraver, who, however, hardly deserves to rank as an artist. The dotted work of the obverse is peculiar, and though extremely rude, by no means ineffective. The horseman on the reverse of No. 21 seems to wear the same kind of embossed cuirass as that on No. 12. The legends TASCIA and TASCIO respectively show that the spelling of the period had not been reduced to a monotonous level.

The coin No. 23, though probably struck at the city of Segontium, and not at Verulamium, bears upon the reverse a horseman in all respects identical with that on the silver coin of Verulamium, No. 14.

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No. 24 represents a remarkable coin, the type of which has been known since the days of Camden, some 260 years ago. The device of the two interlacing squares on the obverse is almost identical with that on some of the copper coins of Verulamium, while the legend VIR or VER beneath the horse on the reverse seems conclusively to prove that it was issued from the mint of that town. It must, however, be admitted that the type of the interlacing square is also found on a small silver coin of Verica, a son of Commius the Atrebatian. The legend DIAS on the obverse suffices, notwithstanding, to settle the question of attribution, as it occurs in conjunction with the name TASC on the copper coins of Verulamium, Pl. ii., Nos. 7, 8. The finding, moreover, of the coin here engraved must not be left out of consideration. It was dug up near Harlow, on the borders of Herts and Essex. As to the meaning of DIAS it is difficult to offer a conjecture. Its occurrence on coins inscribed also TASC seems to show that it is not merely a variant of the beginning of the name Tasciovanus. Of its being in some manner connected with the city of Verulamium or its rulers there can be no doubt, but the nature of the connection has still to be discovered.

It will be noticed that the usual weight of a well preserved silver coin of Tasciovanus is from 18 to $21\frac{1}{2}$ grains, or approximately the same weight as the smaller denomination of his gold coins. There is, however, a small variety of the coin, No. 14, which weighs less than 12 grains, and which may therefore have been intended to pass current as the half of the larger and more common silver coins. As to the proportionate value of silver, gold and copper among the ancient Britons nothing can safely be asserted. It may be remarked that the weight of the Roman denarius of the first century, of which examples are occasionally found with hoards of British coins, is about 60 grains. The native coins may therefore have been of the value of one third of the denarius.

The whole of the coins shown in Plate ii. were in all probability minted at Verulamium. Though classed as copper, some few of them were struck on blanks of yellow brass. The type of the two interlacing squares, of which varieties appear on Nos. 1, 2, 3, is, as already remarked, closely connected with that on the obverse of the silver coin reading DIAS, Pl. i., No. 24. On No. 1 the name of the town is given in the locative case VERLAMIO, 'at Verulam,' in the same manner as on some copper coins of Cunobelinus, the name of his capital town is given on a double tablet as CAMVLODVNO, 'at Camulodunum.' The connection with the cruciform ornament developed from the laureate head of Apollo can be traced in the obverse type of No. 4. The obverse type of No. 5 with two heads side by side still requires elucidation. It is worthy of remark that on the first six coins in the plate there are representations of all the chief domesticated animals—the bull, horse, boar, ram and goat. These are suggestive of the country being rich in flocks and herds. On the other coins the types seem to be more indicative of contact with Roman civilization.

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Centaurs playing on the double flute, the Pegasus, the sea-horse or hippocampus, the lion, and what may be a seated Venus, can hardly be regarded as indigenous.

The heads on the obverses, some with beards and some without, may or may not be intended to be portraits of Tasciovanus. The legends on Nos. 7, 8, which together make up TASC, DIAS, show that the latter word has some meaning of its own distinct from the former, but what that meaning may be is matter for conjecture. Why a centaur should have been chosen for the type on the reverse is equally obscure. A centaur blowing a horn is to be seen on some copper coins of Cunobelinus.

Nos. 10, 11 give the name of the king both on the obverse and reverse; the latter coin is of large module and twice as heavy as those of the ordinary size, so that it was probably current at twice their value. The armed horseman appears on Nos. 14, 15 in much the same style as on the large gold coins in Plate i. There is a general resemblance between the coins Nos. 16 to 19, with a bearded head on the obverse and a hippocampus on the reverse, the inscription beneath which is sometimes VER or VIR, and sometimes TAS. On one variety the form VIIR occurs, showing that the substitution of II for E, such as frequently occurs in Roman inscriptions and occasionally on Roman coins, such, for instance, as those of Mark Antony, was also in vogue among the engravers of the dies for British coins, thus increasing the probability that these artists were Romans rather than Britons.

On No. 20 the boar reappears on the reverse similar in character to that on No. 4. The weight however is only 19 grains in this case as against $39\frac{1}{4}$ grains in the other. The value of No. 20 was therefore probably the half of that of No. 4.

The types of the remaining four coins, Nos. 21 to 24, are essentially Verulamian, but they exhibit varieties of the mysterious legend RVFI, RVFS, RVLIS, or RVL A. Whatever may be the correct form, and whether or not a chief with some such name as Rufinus ever reigned at Verulamium, we have evidence of a popular British lady of the name of Rufina having existed at Rome in the days of Martial,¹ who flourished in the latter half of the first century of our era:—

Claudia cæruleis cum sit Rufina Britannis
Edita, cur Latæ pectora plebis habet?

The small coins, No. 24, weigh but 14 and 10 grains, and seem to represent the value of half the coins of ordinary size. There are therefore copper coins of Verulamium of at least three denominations, like the penny, halfpenny and farthing of modern times. There are also silver coins probably of two denominations, as well as two denominations of gold coins. The existence of at least six kinds of coins ranging in intrinsic value from about fifteen shillings down to about a quarter of a farthing is indicative of an extensive and varied commerce such as is

¹ Lib. xi. Epig. 54.



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hardly consistent with the views ordinarily held as to the civilization of Britain in the days of the Roman emperors Augustus and Tiberius.

It will now be well to say a few words as to the ancient British coins other than those of Tasciovanus and Verulamium that have been found within the county. Fuller details with regard to nearly all the instances that I shall cite are to be seen in *The Coins of the Ancient Britons* and the supplement to that work.

Examples of the second variety of the prototype of the large gold coins figured on p. 015, fig. 12, have been found at Ashlyns near Berkhamsted, near Hemel Hempstead, and at Wildhall near Hatfield. Other uninscribed gold coins have been discovered at Barnet, Standon and Braughing.

A small gold coin of a Sussex type was found near Hitchin, an uninscribed silver coin of Icenian type at Bygrave near Baldock, and others of more western character at Braughing, where numerous copper coins of various types, some of uncertain attribution, have been unearthed. Some cast tin coins have been found in the same locality.

Coins of Cunobelinus, the son of Tasciovanus, have occurred not unfrequently in the county. His gold coins have been found near Baldock, near Tring, and at Lilly Hoo near Hitchin, while his copper coins have been found at Berkhamsted, Tring, Wigginton, Pitstone, Ashwell, Baldock, Royston, Walsworth near Hitchin, Braughing, and on the site of Verulamium.

EARTHWORKS

Earthworks in Hertfordshire are fairly numerous, but in many cases it is almost impossible to determine their age.¹ One of the most important is the Grimes-ditch, Grimsdyke, or Graemesdyke, of which traces are visible on Berkhamsted Common, and which reappears on the other side of the valley of the Bulbourne, while a vallum extends in a bold sweep from near the town of Great Berkhamsted through the parishes of Northchurch and Wigginton to the north of the camp of Cholesbury, and thence to St. Leonard's in Buckinghamshire, continuing, it is said, past Missenden to near Bradenham. If the name of this earthwork be the Saxon 'Grams-dic,' 'the devil's dyke,' it seems to afford evidence that the work dates from pre-Saxon times, and in Saxon days was regarded as of unearthly origin.

Another important earthwork, known as Beech-Bottom,² lies between the site of Verulamium and Sandridge, and has by some been regarded as of Roman date. It is however probably pre-Roman, and it may be connected with a large encampment known as 'The Moats'³ or 'The Slad,' which is situate a little to the east of Wheathampstead. The outer earthworks, which run nearly parallel to parts of the Roman wall round Verulamium,⁴ are also probably pre-Roman.

¹ Cussans, i. p. 8; *Trans. Herts Nat. Hist. Soc.*, iv. xlix.; *Proc. Soc. Ant.*, ii. p. 215.

² *Brit. Arch. Assoc. Journ.*, xxvi. p. 182; *Trans. Herts Nat. Hist. Soc.*, iv. p. xx.

³ *Trans. Herts Nat. Hist. Soc.*, v. p. xxxviii.

⁴ *Arch. Journ.*, xxii. p. 299; *Brit. Arch. Assoc. Journ.*, xxvi. p. 238.

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It is possible that Berkhamsted Castle¹ stands upon the site of an earlier camp, as British and Roman coins have been found there. The mound or keep, like those at Bishop Stortford, Pirton and Hertford, is probably Saxon.

The oval camp known as 'Aubury,' or 'The Aubreys,'² near Redbourn, may be assigned to a pre-Roman date.

A few barrows of pre-Roman date have been opened, one of which, at Therfield, has already been mentioned as having contained some bars of copper. One near Hitchin,³ to the south of the Icknield Way, proved to contain burnt bones, a small blade of copper, and an urn of coarse clay. In a barrow near Royston⁴ a so-called incense vessel was found, but in one opened at Easneye⁵ near Ware, in 1899, burnt bones and charred wood were all that rewarded our researches.

There are several earthworks and camps of Roman origin in the county as well as some of Saxon date, like 'the Bank' at Cheshunt, but these do not belong to this section of the County History. References to them will however be found in the 'Archæological Survey of Herts,' printed in the 53rd volume of the *Archæologia*.⁶

DESCRIPTION OF THE PLATES OF COINS

PLATE I

GOLD COINS

No. 1. *Obv.* Cruciform ornament formed of wreaths, with crescents and ring ornaments in the centre and V-shaped and open crescents in the angles.

Rev. TASCIOVAN. Horse galloping to the right; above, a ring ornament surrounded by pellets; below the horse, and above its head, a ring ornament; pellets before and behind. *AV* 85 grains.

Found at High Wycombe.

A.B.C.,⁷ pl. v. No. 7.

No. 2. *Obv.* Nearly similar ornament, but the wreaths less curved and pellets in the field.

Rev. [T]ASCIIV. Horse to the right; above, a bull's head between two pellets; below, a curved object and a ring ornament; over the horse's head a rosette of pellets; behind, two pellets. *AV* 85 grains.

Found at High Wycombe. Another found near Chelmsford.

A.B.C., pl. v. No. 8.

No. 3. *Obv.* Similar to No. 1, but with annulets and pellets in the field, and one of the wreaths curved in the opposite direction.

Rev. TAXCI. Horse to the right, with much the same adjuncts as No. 2.

AV 82 $\frac{8}{10}$ grains.

Found at Dorchester, Oxon. Another found at Shorne, near Gravesend. Others at St. Albans, Maldon (Essex), and Leicester. *A.B.C.*, pl. v. No. 9.

¹ *Arch. Journ.*, xxx. p. 407; *St. Albans A. and A. S. Trans.*, 1890-91, p. 17.

² *St. Albans A. and A. S. Trans.*, 1887, p. 66.

³ *Cussans*, iii. p. 13.

⁴ *Arch. Journ.*, v. p. 235.

⁵ *Proc. Soc. Ant.*

⁶ 1892, p. 245.

⁷ *A.B.C.* indicates *The Coins of the Ancient Britons*, already often cited.

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- No. 4. *Obv.* Cruciform ornament, much like that on No. 2, but with three pellets between the central crescents and several ring ornaments in the field.
Rev. TASC. Horseman galloping to the right, brandishing the *carnyx* or war-trumpet; in front of the horse, a wheel and three pellets; behind, a wheel. There is an exergual line, but nothing in the space below. AV 85 grains.
 This coin was among those found at High Wycombe. A nearly similar coin was found near St. Albans, but reads TAS only. A.B.C., pl. v. Nos. 10, 12.
- No. 5. *Obv.* Nearly similar to that of No. 4.
Rev. TASC. As No. 4, but a ring ornament below the exergual line. AV 84 $\frac{3}{4}$ grains.
 Specimens have been found near Malling and Sevenoaks; in the Victoria Park, London, and near Chelmsford. A.B.C., pl. v. No. 11, pl. xx. No. 11.
- No. 6. *Obv.* TASCI. between the limbs of a cruciform ornament, proceeding from two crescents in the centre, and terminating in ring ornaments.
Rev. [T]ASC. A horse galloping to the right; above, a bucranium. AV
 Found at Reculver. Another found at West Malling, Kent, weighs 20 $\frac{1}{4}$ grains. A.B.C., pl. v. No. 13.
- No. 7. *Obv.* TASC. within a compartment, placed across a triple band, curved lines and ring ornaments in the field.
Rev. Pegasus, springing to the left; in front and behind, a small ring ornament; above, two pellets; below, a small star. AV¹ 21 $\frac{8}{10}$ grains.
 Specimens have been found at Thrapstone, Northamptonshire (20 $\frac{1}{2}$ grains), and near Stoke Mandeville, Bucks (20 $\frac{3}{4}$ grains). A.B.C., pl. v. No. 14.
- No. 8. *Obv.* Similar to that of No. 4, but with the letters VER among the ornaments.
Rev. TASC. Horseman, as on No. 4. AV 84 $\frac{8}{10}$ grains.
 Said to have been found at Old Sarum; another, with the letters less distinct, found at High Wycombe. A variety has a T between the central crescents. A.B.C., pl. vi. No. 11.
- No. 9. *Obv.* VERO.² between the limbs of a cruciform ornament, with two crescents in the centre.
Rev. TAS. below a horse prancing to the left; above, a bucranium. AV 21 grains.
 It is not known where this coin was found, but another of the same type, though showing some other details, was found near Oundle. A.B.C., pl. xx. Nos. 13, 14.
- No. 10. *Obv.* TASCIO. on a tablet; above and below, a wheel, with annulets and pellets on either side.
Rev. SEGO. in front of a horseman galloping to the right, holding a trumpet; behind, a wheel; below the exergual line, a ring ornament. AV 82 $\frac{9}{10}$ grains.
 This coin is in the Hunter collection at Glasgow, and its place of finding is unknown. A fine specimen was found near Tring, Herts (84 grains), and others in Kent. A.B.C., pl. viii. No. 11, xx. No. 9.
- No. 11. *Obv.* TASCIO. within a compartment; above and below, a wheel, with a pellet on either side.
Rev. Horse prancing to the left; above, a wheel, with four pellets for spokes; below, a coiled serpent. AV 20 $\frac{1}{4}$ grains.
 This is the quarter of the larger coin No. 10, but it is not known where it was found. A.B.C., pl. xx. No. 10.

¹ Erroneously stated in A.B.C. as 28 $\frac{8}{10}$ grains.

² The O may possibly be merely a kite-shaped ornament.

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No. 12. *Obv.* TASCIO RICON. in two compartments of a tablet with curved ends, placed in front of a five-fold wreath of plain and corded lines; curved lines proceeding from the angles between the wreath and tablet.

Rev. Horseman to the left, armed with sword, shield, and cuirass, and looking backwards; below, a ring ornament; an annulet in front. AR 84 grains.

This coin was found at St. Ives, Huntingdonshire. Another was found at Leagrave, near Luton. Others are recorded from Norwich, Rome, and Rouen. There are several varieties of the legend, such as TASCI RICONI, TASCIOV RICON, TASCI RICON, and TASCI RICOIN. They have been found at Halstead, Castle Hedingham, and near Epping, Essex; near Biggleswade and Dunstable, Bedfordshire; and an ancient forgery in brass at Wantage, Berks.

A.B.C., pl. viii. Nos. 6, 7, 8, 9, xx. No. 12.

SILVER COINS

PLATE I.

No. 13. *Obv.* VER. within a beaded circle.

Rev. TASCIA. Horse cantering to the right. AR 21½ grains.

The coin engraved is in the British Museum. I have a specimen that was found at Verulam. *A.B.C.*, pl. vii. No. 1.

No. 14. *Obv.* VER. As No. 13.

Rev. Naked horseman prancing to the right, wearing a diadem; the whole within a beaded circle. AR 20½ grains.

Finding place unknown. I have also a small coin of the same type found at Dorchester, Oxon, and weighing less than 12 grains. It may represent the half of the larger coins. *A.B.C.*, pl. vii. 2 and p. 537.

No. 15. *Obv.* VERL. in the angles of a cruciform ornament, with a square closing a cross in the centre. The whole within a beaded circle.

Rev. TAS. above a boar running to the right; below, a star; a beaded circle around the whole. AR 20½ grains.

Locality unknown, but another specimen was found on the site of ancient Verulam. A third is in the Bodleian Library at Oxford.

A.B.C., pl. xxi. No. 1. and p. 245.

No. 16. *Obv.* TASC. on a tablet placed within a triple circle, the centre one beaded.

Rev. Horseman galloping to the left, almost hidden by a long shield; two bands streaming backwards from his shoulder. AR 18 grains.

Other specimens weigh as much as 23 and 24 grains. I have an ancient forgery made of copper, plated, which was found at Biggleswade.

A.B.C., pl. vi. No. 2.

No. 17. *Obv.* TASC. on a tablet, much as on the gold coin No. 7.

Rev. Pegasus to the left; a star and pellets in the field. There are horn-like projections from the head of Pegasus. AR 18½ grains.

It is not known where this unique coin was found. *A.B.C.*, pl. vi. No. 1.

No. 18. *Obv.* TASCIA. Laureate, beardless head to the right, within a beaded circle.

Rev. Bull butting to the left. AR 18½ grains.

Some specimens show a beaded circle on the reverse. The type seems copied from that of a silver coin of Augustus. *A.B.C.*, pl. vi. No. 5.

No. 19. *Obv.* TASCIA. An eagle standing to the left, its head turned to the right; the whole within a beaded circle.

Rev. Griffin walking to the right; in front, a ring ornament; below, a triangle of pellets. AR.

This coin is in the Bodleian Library. I have another specimen of the type (14½ grains), found at Wallingford. It seems to read TASCIO.

A.B.C., pl. vi. No. 7.

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- No. 20. *Obv.* Bearded head of rude work to the left ; in front, two small crosses ; the whole within a beaded circle.
Rev. TASCIO. Horseman galloping to the left, holding javelin ; in front and behind, a star of pellets. Æ 16 $\frac{7}{16}$ grains.
- No. 21. *Obv.* As No. 20, but of even ruder work.
Rev. TASCIA. Nearly similar to No. 20. Æ 14 $\frac{3}{4}$ grains.
 The place of finding of either of these coins is not known, but I have an example of the same type found at Gayton, near Blisworth.
A.B.C., pl. vi. Nos. 3 and 4.
- No. 22. *Obv.* TAS. Pegasus walking to the left, within a beaded circle.
Rev. Winged griffin springing to the right ; around, three circles, that in the centre formed of pellets. Æ 20 $\frac{9}{16}$ grains.
 There is no record of its place of finding. A.B.C., pl. vi. No. 6.
- No. 23. *Obv.* SEGO. on a tablet, within a circle formed of two lines twisted into a kind of guilloche pattern.
Rev. Horseman to right, as on No. 14. Æ 19 grains.
 Place of finding unknown. A.B.C., pl. viii. No. 10.
- No. 24. *Obv.* DIAS. on a tablet, with an annulet or ring ornament above and below, in the centre of a star formed of two squares interlaced, one having incurved sides.
Rev. VIR. or VER. beneath a horse galloping to the left ; above, a curved object of doubtful import. Æ.
 Found near Harlow, on the borders of Herts and Essex.
A.B.C., pl. vi. No. 14.

COPPER AND BRASS COINS

PLATE II.

- No. 1. *Obv.* VERLAMIO. between the rays of a star-like ornament formed of two interlacing squares with incurved sides, one plain the other beaded. In the centre a boss with a raised rim. The points of the star end in annulets, and there are numerous pellets in the field.
Rev. Bull to the left ; his foreleg raised and his tail in the air, surrounded by a wreath. Æ 25 $\frac{1}{2}$ to 33 $\frac{1}{2}$ grains.
 Coins of this type have been found at Verulam ; at Chipping Warden, Northants ; Chesterford and Harlow, Essex ; and at Biggleswade and Sandy, Beds.
A.B.C., pl. vii. No. 3 and p. 537.
- No. 2. *Obv.* A ring ornament in the centre of a star formed of two interlacing squares, the whole within a kind of wreath.
Rev. Bull as on No. 1, but to the right, and within a beaded circle. Æ 33 $\frac{1}{2}$ grains.
 Specimens are recorded from Braughing, Herts, and Harlow, Essex.
A.B.C., pl. vii. No. 4 and p. 538.
- No. 3. *Obv.* Ornament formed by a square with loops at the corners interlacing another square with incurved sides. There are crescents and pellets outside two of the corners of the latter, and ring ornaments within the other two. In the centre is a small cross ; the whole is surrounded by a beaded circle.
Rev. TASCI. Horse galloping to the left ; above a ring ornament and trefoil ; the whole within a beaded circle. Æ 30 $\frac{9}{16}$ grains.
 A smaller coin of inferior workmanship, and weighing only 14 $\frac{1}{2}$ grains, was found at Braughing, Herts. I have seen a coin of the full size that was found at Barrington, Cambs.
A.B.C., pl. vii. No. 5 and p. 538.

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No 4. *Obv.* A triple wreath, the middle line beaded, divided by crescents, back to back, in the centre; between them two annulets, from which beaded lines proceed to a beaded circle surrounding the whole. Four scroll-like figures run out from the points of the crescents. Pellets in the field.

Rev. VER. Boar running to the right; above, a crescent; the whole within a beaded circle. Æ 39½ grains.

Found at Braughing, Herts; another specimen found at Amiens, France.

A.B.C., pl. xxi. No. 2 and viii. No. 5.

No. 5. *Obv.* R (?) Two heads in profile; side by side, the upper one bearded; the hair crisped in a double row of locks; the whole within a beaded circle.

Rev. TASC. Ram standing to the left, on a beaded exergual line; in front and below rosettes of oval pellets. Æ 31½ grains.

Probably found near Biggleswade; another of the same type found at Braughing, Herts.

A.B.C., pl. vii. No 6, xxi. No. 5.

No. 6. *Obv.* VER. Male head to the left, with a double row of locks and a short beard.

Rev. Goat to the right; above, a rosette; below, a ring-ornament; behind, a cross of pellets; other pellets in the field. Æ 15¾ and 13¾ grains.

Found at Chesterford, Essex.

A.B.C., pl. viii. No. 2 and p. 538.

Nos. 7, 8. *Obv.* TASC. DIAS. behind and in front of a bare head to the right, sometimes bearded; the whole within a beaded circle.

Rev. VIR. or VER. Centaur prancing to the right, playing on the double flute; above, a solid crescent; in front, a ring ornament or an annulet; the whole within a beaded circle. Æ 20½ to 25 grains.

Examples have been found at Braughing and at the Cow-roast near Tring, Herts; and in Huntingdonshire.

A.B.C., pl. vii. No. 7, xxi. No. 11.

No. 9. *Obv.* Beardless head to the right. Legend uncertain.

Rev. VER. beneath a seated figure to the left; in front, what appears to be a standard with a bird at the top; behind, another standard; the whole within a beaded circle. Æ usually 28 to 29 grains.

Coins of this type have been found on the site of Verulam and Braughing, Herts, and near Arlesey, Beds. Though at least six specimens are known the legend on the obverse is still undetermined.

A.B.C., pl. xiii. No. 8; xxi. No. 8.

No. 10. *Obv.* TASCIO. in front of an unbearded laureate head to the right; the whole within a beaded circle.

Rev. TASCIO. A lion to the right 'passant guardant' on a plain exergual line; a beaded circle surrounds the whole. Æ 36½ grains.

Place of finding unknown.

A.B.C., pl. xxi. No. 3.

No 11. *Obv.* TASCIAVA. Bare, beardless head to the right; beaded circle.

Rev. TAS. Pegasus to the left, the off fore-leg raised; beaded circle.

Æ 69½ grains.

Other specimens weigh 88 $\frac{3}{10}$ and 67½ grains. That figured was found near Cambridge. Another was found in Berkshire. From their weight these pieces seem to have been current at double the value of the smaller pieces, which usually weigh from 30 to 40 grains.

A.B.C., pl. vi. No. 8.

No. 12. *Obv.* TASC. in front of a beardless head to the right.

Rev. VER. below a Pegasus to the left; above, a trefoil; in front, a ring-ornament; the whole within a beaded circle. Æ 39½ grains.

An example of this type was found on the site of Verulam, and another at Oundle.

A.B.C., pl. xxi. No. 9, vii. No. 8.

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- No. 13. *Obv.* TAS . . . Beardless head to the right.
Rev. Horse galloping to the right ; within a double circle, the outer one beaded.
Æ.
 Found at Springhead, near Southfleet, Kent. The final part of the legend is uncertain.
A.B.C., pl. vi. No. 9 and p. 536.
- No 14. *Obv.* TAS. in front of a beardless male head to the right ; behind, a kind of branch ; the whole surrounded by a beaded circle.
Rev. (VER.) Horseman charging to the right, brandishing a spear (?) ; in front of the horse a star of seven pellets. There is a double exergual line, the upper one plain, the lower beaded.
Æ 41 grains.
 This coin was found at Burwell, near Cambridge. Others have been found at Braughing, Herts, showing the VER ; and at Dorchester, Oxon.
A.B.C., pl. xxi. No. 4.
- No. 15. *Obv.* TAS. (?) Bare, beardless head to right ; behind, a fillet (?) and a pellet ; the whole within a beaded circle.
Rev. V beneath a horseman to the right, wielding a long staff or spear.
Æ 31 grains.
 Found at Wenden near Saffron Walden, Essex.
A.B.C., pl. viii. No. 3 and p. 539.
- No. 16. *Obv.* Rude head in profile to right, with flowing beard.
Rev. VIR. or VER. Hippocampus to left, on a double exergual line.
Æ 31, 32 grains.
 Found near Biggleswade. Others found on the site of Verulam and at Braughing, Herts, as well as at Arlesey, Beds.
A.B.C., pl. vii. No. 9 and p. 538.
- No. 17. *Obv.* V (?) behind a bare, bearded head to the right.
Rev. TAS. beneath a hippocampus to the left ; above, a ring-ornament and trefoil.
Æ 37½, 38 grains.
 Place of finding unknown.
A.B.C., pl. vii. No. 11.
- No. 18. *Obv.* VERL. in front of a bearded head to the right.
Rev. VIIR. below a hippocampus to the left ; in front, a star of pellets ; above, a decorated ring-ornament between two trefoils.
Æ 40½ grains.
 Place of finding unknown. A coin of the same type found on the shore at Ostend,¹ Belgium.
A.B.C., pl. xxi. No. 7.
- No. 19. *Obv.* Bearded head to right as on No 16.
Rev. VER. beneath hippocampus to the left ; in front, a star of pellets ; above, a ring-ornament between two trefoils.
Æ 37½ and 44½ grains.
 Two coins of this type were found at Braughing, Herts ; and another reading VIR. near Arlesey, Beds. There may have been a legend on the obverse.
A.B.C., pl. xxi. No. 6.
- No. 20. *Obv.* VER ? Bare head to the right ; the whole within a triple circle ; that in the centre beaded.
Rev. A boar running to the right ; above, an annulet ; at its feet, in front, a cluster of pellets.
Æ 19 grains.
 Found at Chesterford, Essex ; another near Biggleswade, Beds.
A.B.C., pl. viii. No. 4, xiii. No. 9.
- No. 21. *Obv.* RVFI (?) in front of a bearded head to the right ; the whole within a beaded circle.
Rev. VIR. or VER. beneath a horseman cantering to the right ; in front of his head a pellet ; the whole within a beaded circle.
Æ 21½ grains.
 Found at Braughing, Herts ; others found at Creslow near Aylesbury, Bucks ; Dorchester, Oxon ; Upper Stondon, Beds ; and Harlow, Essex.
A.B.C., pl. xxi. No. 12, vii. Nos. 12, 13.

¹ *Proc. Num. Soc.*, October 15, 1896.

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No. 22. *Obv.* RVFS. on a tablet; above and below, an annulet; the whole within a beaded circle, with a kind of engrailed circle beyond it.

Rev. Pegasus(?) to the left.

Æ 30 grains.

Found at Mutilow Hill, on the Fleam Dyke, Cambridge. I have another specimen from Creslow near Aylesbury, Bucks, weighing $33\frac{1}{2}$ grains.

A.B.C., pl. vii. No. 14.

No. 23. *Obv.* RVFI. or RVLI. above a lion standing to the right; within a border formed by two concentric circles connected by radiating curved lines.

Rev. An eagle to the right with expanded wings, its head turned back to the left.

Æ 37 grains.

Found in France. Another coin of the same type is in the Bibliothèque Nationale at Paris.

A.B.C., pl. xxi. Nos. 13, 14.

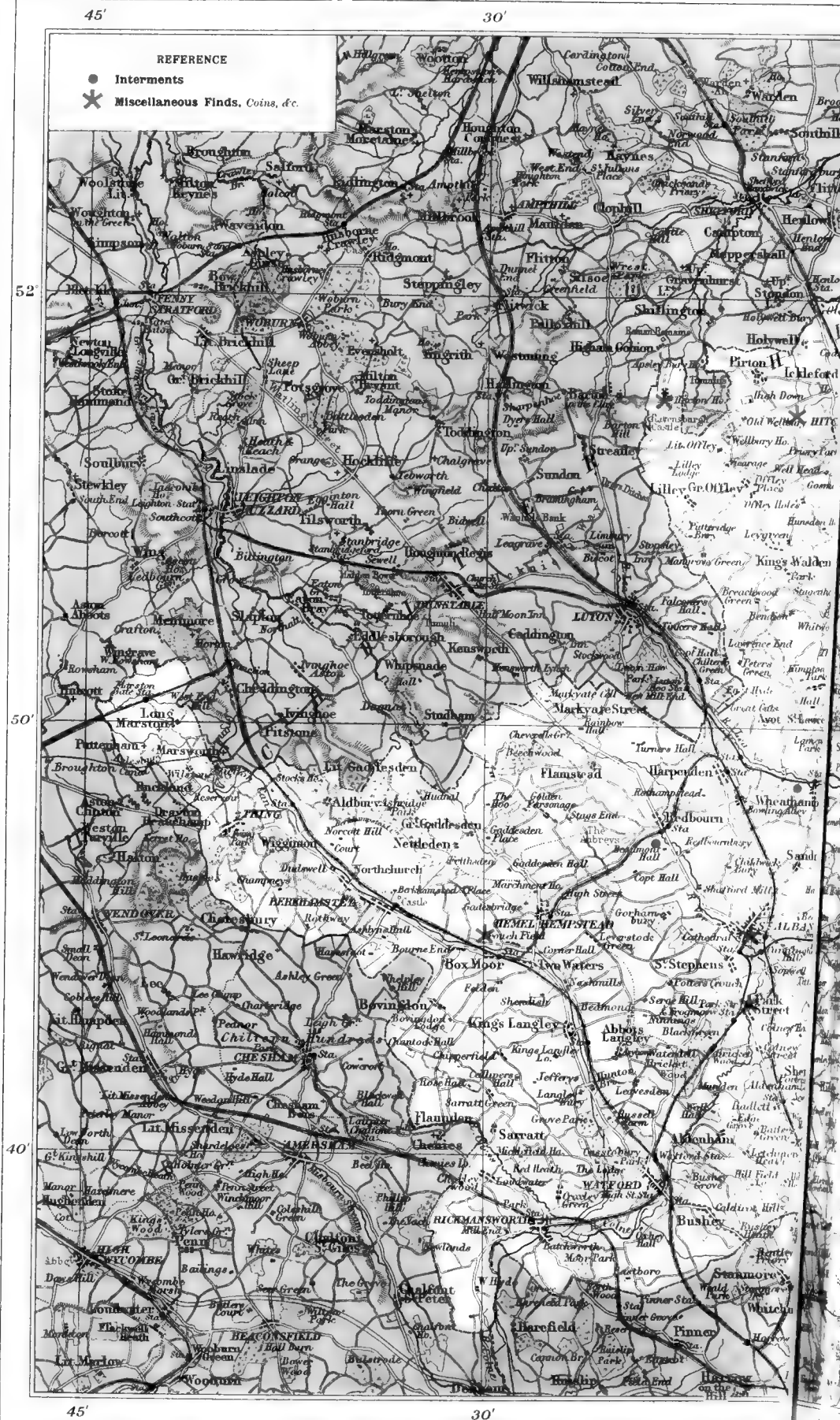
No. 24. *Obv.* A square with incurved sides; within it a similar square with an annulet in the centre; the whole within a beaded circle.

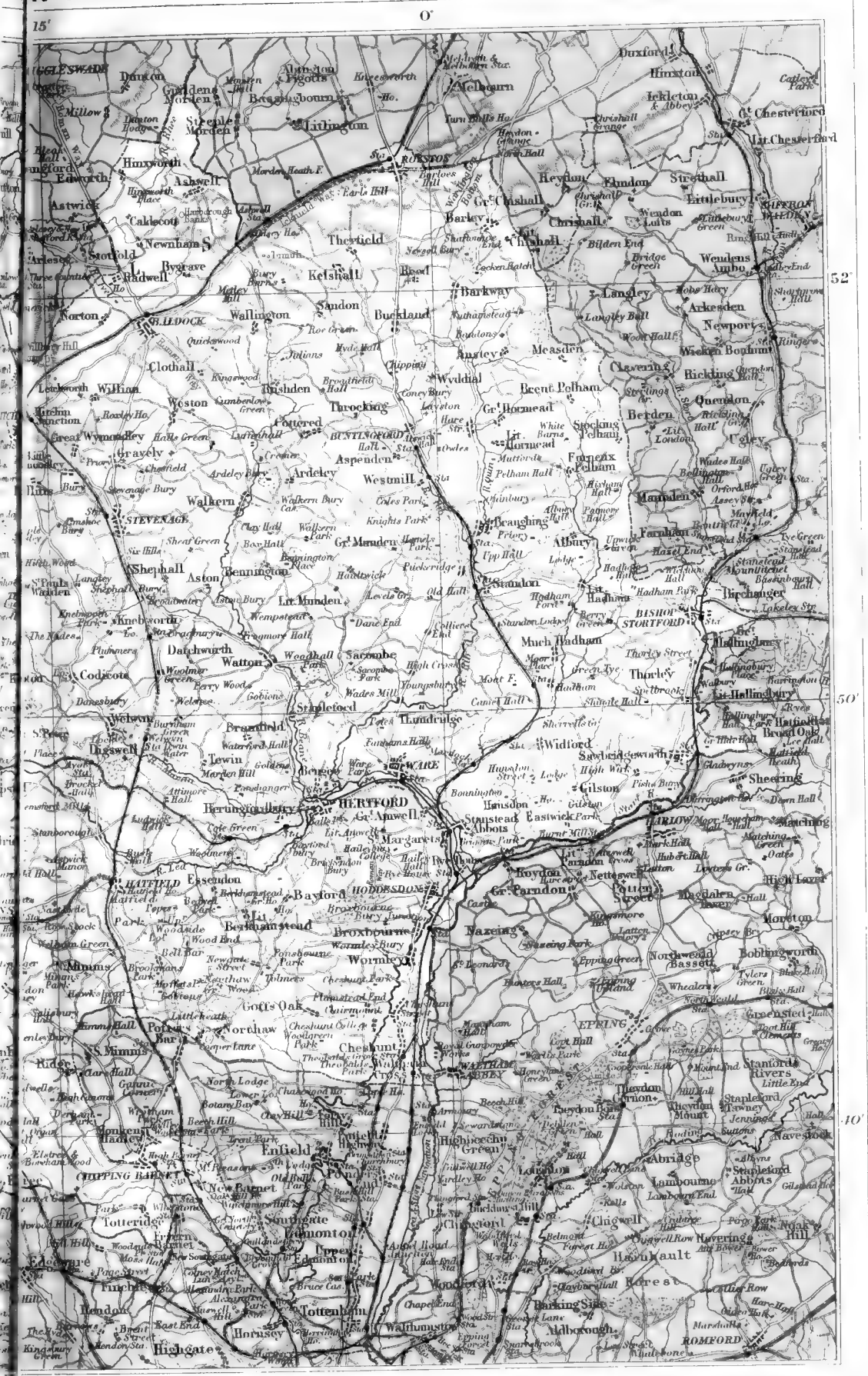
Rev. RVFI. (?) Eagle to the left, with wings partly expanded; its head to the right, holding a branch(?) in its beak.

Æ 14, 10 grains.

Found near Biggleswade, Beds. From their size and weight these small pieces seem to be the halves of the ordinary coins of Verulam and the quarters of the large pieces such as No. 11.

A.B.C., pl. viii. No. 1.





ANGLO-SAXON REMAINS

IT is generally held that the limits of the East Saxon diocese show Hertfordshire to have been originally connected with Essex and Middlesex ; and though a distinction in later times between the shire of Hertford and the districts of the East and Middle Saxons is suggested by the present names of these counties, there is nothing as yet in archæology to disprove the above connection during the pagan Anglo-Saxon period. The Thames was at that time bounded on the north by marsh and mudflat as far as the river Lea, and thence to the Chilterns by the forest of Middlesex, which may still be traced in the county, but formerly covered almost the entire area between the Colne and the Lea, no doubt extending in strips along the London clay of the eastern and southern borders of Hertfordshire. Though the subsoil of the rest of the county is chalk, which naturally produces bare and open country, the clay area, bounded by a line from Bishops Stortford through Ware, Hatfield, St. Albans and Rickmansworth, would encourage the growth of timber and underwood ; and in addition, much of the forest of Chiltern, which is still well wooded in parts, was contained in the county.

The diocese of London had its origin in the charge given to Mellitus in 604 to preach the Gospel to the East Saxons ; and his seat was fixed at London shortly afterwards, St. Paul's remaining to this day the metropolitan church, though the diocesan limits have been altered from time to time. The original boundary on the north-west¹ shows that strips of country on the Chilterns were excluded from the diocese of the East Saxons, though incorporated with that of St. Albans in the nineteenth century. And it is just possible that the earlier arrangement may have been due to the presence of a different tribe in the hill country between the Colne and the Icknield Way, a British roadway running from Berkshire into Cambridgeshire, below the chalk escarpment of the Chilterns. The name at least of such an isolated people is not far to seek. The Chilternsaetna are mentioned in a remarkable document known as the Tribal Hidage, which has recently been assigned² on very reasonable grounds to the reign of Edwin of Northumbria, that is, to the first half of the seventh century.

¹ See maps in Rev. Geoffry Hill's *English Dioceses*, pp. 22, 85, 394.

² W. J. Corbett in *Transactions of Royal Historical Society*, new ser. xiv. 191.

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If analogy counts for anything, the Chilternsaetna would in the ordinary course of events have given their name to a county in later Anglo-Saxon times, and Chilternset would have survived along with Dorset and Somerset. Though the Chiltern Hundreds still mark their district, the settlers of Chiltern, like those in Elmet, the Peak of Derbyshire and elsewhere, were absorbed into more important or more convenient political divisions. Many names with the suffix *saeta* or *saetna* occur in the early records ; and though few can be located with any certainty, there is nothing in the form of their names inconsistent with the British origin of these peoples, who may have coalesced with their foreign conquerors. The Somersaetna and Dorsaetna certainly retained their independence till the middle of the seventh century, while the Magasaeta of Herefordshire and the Wilsaeta of Wiltshire were both on the British border. There may be some significance too in the story that before Caedwalla won the throne of Wessex in 685 he was a fugitive in the forests of Andred and Cilton, the latter being in all probability an erroneous form of the original Ciltern. His thoroughly British name warrants the conjecture that in these isolated tracts Caedwalla found not only a refuge from his Saxon enemies, but help and encouragement from the native element that must still have been strong in his day, and probably survived to a much later date in some localities.

Whatever the proportion of British blood in their veins, there is no doubt that the inhabitants of this part of the country spoke Anglo-Saxon at an early date. According to Dr. A. J. Ellis,¹ south Hertfordshire belongs to the south-eastern district, which also comprises all Middlesex, south-east Buckinghamshire and south-west Essex. Throughout the district however there is a substratum of the mid-eastern dialect, which is detected in the northern parts of Hertfordshire and in nearly the whole of Essex, also in Bedfordshire, Huntingdonshire and mid-Northamptonshire. With the exception therefore of the Anglian districts of Norfolk, Suffolk and Cambridgeshire, it may be said that all east of the Chilterns and the Northamptonshire uplands is connected by community of dialect, which no doubt took its rise in community of race among the earliest Teutonic settlers of the district, and this has been gradually modified by the speech of London during fourteen centuries.

The grouping of dialects in this part of the country would thus unite Hertfordshire with Essex, and lead us to expect from archæology some indication of Saxon rather than of Anglian influence in the county. The few results already obtained in Hertfordshire certainly show a marked absence of Anglian characteristics, but many discoveries must be made before the peculiarities of East Saxon remains can be demonstrated. To the west of the Chilterns enough has been recovered from the graves to show that the settlers in the upper Thames valley, presumably the Saxons of the west, were homogeneous and distinguishable from their neighbours ; but at present nothing has been found to link them with

¹ *English Dialects : their Sounds and Homes*, pp. 51, 57.





FIG. 3.



INCHES

FIG. 1.



FIG. 4.



INCHES

FIG. 2.



FIG. 5.



FIG. 7.



FIG. 6.

ANGLO-SAXON REMAINS, HERTFORDSHIRE.
(All actual size, except figs. 1, 2.)

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the people of Essex, who probably reached the eastern slopes of the Chilterns at one time, but were mainly confined to the north of Essex and the neighbourhood of London. In fact, the few discoveries in their district point rather to a connection with Kent than with Wessex, and accord so far with the written records of the time.

When history opens with the re-introduction of Christianity into Britain at the close of the sixth century, Kent under Aethelbert is the paramount power in the south-east, and is perhaps the one fully developed kingdom in the country. Whatever the meaning of the term *bretwalda* applied to that monarch, it is likely that Aethelbert, the patron of Mellitus, administered a certain territory north of the river. One of his chief cares would doubtless be to control the great Roman roads which were the natural continuations of the Watling Street from the Straits of Dover to London; and the task of guarding the highways through Hertfordshire would perhaps account for the burial of characteristic Kentish ornaments and other objects with their deceased owner, in accordance with the pagan custom of the age. As London was the centre of the Roman road system in this country, its master would not only monopolize the commerce with the continent, but benefit by an almost exclusive intercourse with the more highly civilized courts of Europe and the authorities of the Roman church.

Poor as Hertfordshire is in remains of the Anglo-Saxon period, it has yet produced a remarkable object, the like of which has never been found in these islands and but seldom on the continent. It is now included in the national collection, and may be best described as a bronze ewer (fig. 2), nearly 9 inches high, with a pear-shaped body, a short curved spout, and a thin handle with a pellet at the top. The mouth is circular, about 2 inches in diameter, and covered by a hinged lid of moulded pyramidal form with a knob in the centre. The base is flat and rests on three feet of somewhat peculiar form, which may be compared with three attached to a shallow bronze bowl from the King's Field, Faversham, also in the British Museum; and in view of similar discoveries on the Rhine both vessels may well be of the same date and origin.

According to the account¹ given by Mr. C. H. Read, through whose exertions the ewer became public property, it was, with the exception of the lid, cast in one piece and with considerable skill, the inner surface being fairly smooth and the sides of an even thickness. It is stated to have been found about 1886 in the neighbourhood of Wheathampstead with a glass tumbler (fig. 1) and several human skulls described as male, as well as other bones, and some rings of bronze, which are now lost sight of, but may have been the bands of a small wooden bucket, such as are commonly met with in Anglo-Saxon burials.

Once more the absence of any competent person to take notes on the spot is to be regretted; for though the discovery affords some fresh information as to the early inhabitants of the county, it could perhaps

¹ Society of Antiquaries, *Proceedings*, xviii. 110.

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under proper supervision have added much more to our scanty knowledge of the period. As it is there is nothing to indicate the direction in which the body had been laid, or to substantiate the local story that the ewer was full of coins. Of the objects known to have been associated with the bronze vessel, the glass cup belongs to a type frequently occurring in Kentish graves, but also represented in other parts of the country, as at Desborough, Northants; Clacton, Essex; Southampton and the Isle of Wight. The majority of these vessels are tumblers in the true sense of the word; for being footless, with more or less pointed bases, they could not stand alone, but had to be emptied before being set down. This may account for their popularity among a race whose drinking habits were almost proverbial; and the discovery of such a cup with the bronze ewer seems to show that the funeral observances of the Anglo-Saxons took a similar direction.

With regard to the ewer, on the other hand, the Rhine district furnishes the only parallels known. Three from the Alemannic territory have been figured and described,¹ and so far as one can judge from photographs the Wheathampstead specimen is superior to any hitherto published. Though all four clearly belong to one class, the clumsiness and ill-proportion complained of by Dr. Lindenschmit are not so noticeable in the Hertfordshire example. This however is probably a mere accident, and would certainly not justify the inference that bronze was better worked in Britain than abroad at that period. For instance, a bowl from Walluf, which happens to be figured on the same plate as the three ewers from Germany and is now preserved in our national collection, is quite as well made as the best of the kind from the graves of Kent, and shows at least a trade connection between the inhabitants of both localities.

The Alemannic vessel most like that from Wheathampstead is about an inch less in height, and came from a woman's grave at Wonsheim in Rhenish Hesse, about thirty miles south of Mayence. With it was found a bronze bowl like the Walluf example just mentioned, and a similar bowl was associated with a second ewer at Münzesheim in Baden. The remaining ewer was found in a double grave at Pfahlheim near Ellwangen in eastern Würtemberg, with typical Alemannic relics, including a stirrup and spurs. The occurrence of a pair of spurs in this interment is of importance as approximately marking its date, as it has been ascertained that till the latter half of the seventh century, at least on the continent, only a single spur was worn, and that apparently on the left heel, so as to drive the horse to the right and thus present the shield arm to an enemy. A similar argument as to date has been drawn from the presence of a stirrup, which seems to have been adopted about the same time as the pair of spurs.

These Alemannic examples are enough to prove that the inhabitants of Kent had dealings with the settlers on the middle Rhine during the seventh century, and at least suggest that the district now called

¹ Lindenschmit, *Alterthümer unserer heidnischen Vorzeit*, vol. iv. pl. 58, figs. 1, 2, 3.

ANGLO-SAXON REMAINS

Hertfordshire was then in touch with the most advanced and perhaps the earliest Teutonic kingdom in this country. A more exact date for the deposit of the ewer and tumbler in what was no doubt a grave may be deduced with some plausibility from the gold coin mounted in a ring found with similar objects at Wonsheim. Heraclius, the Roman emperor of the east, was associated with his son Heraclius Constantine, and reigned from 610 to 641. 'Five years after his accession came the alarming news that Jerusalem had been assaulted and taken by the Persians. The sepulchre of Christ and the stately churches of Helena and Constantine were consumed, or at least damaged by the flames; the devout offerings of 300 years were rifled in one sacrilegious day; the patriarch Zachariah and the true cross were transported into Persia; and the massacre of 90,000 Christians is imputed to the Jews and Arabs who swelled the disorder of the Persian march.'¹ To this blow was added the insolent demand of Chosroes that the Emperor of Rome should abjure his crucified God and embrace the worship of the sun; but the energy and ability of Heraclius stemmed the tide of adversity in a series of brilliant campaigns, and in 628 recovered the conquests of the Persian monarch from his parricide son.

'The succeeding year' (629), says Gibbon, 'was illustrated by the restitution of the true cross to the holy sepulchre. Heraclius performed in person the pilgrimage of Jerusalem, the identity of the relic was verified by the discreet patriarch, and this august ceremony has been commemorated by the annual festival of the exaltation of the cross. He received the congratulations of the ambassadors of France and India; and the fame of Moses, Alexander and Hercules was eclipsed in the popular estimation by the superior merit and glory of the great Heraclius.'

It is not surprising therefore that the gold coins of this champion of Christendom should frequently occur in the jewellery of the period. The most notable example in this country was discovered at Wilton in Norfolk, and formed the centre of a richly jewelled cross,² which emphasizes the religious motive of its adoption. Another of his coins was found in pendant form at Sarre in Kent,³ and Christianity had been officially accepted in the Kentish kingdom about half a century before the coin was struck. The occurrence of one mounted in a ring at Wonsheim with the ewer of peculiar type may reasonably be held to fix the date of the Wheathampstead burial within certain limits. While it is unlikely that the coins would be put to any pious use before the recovery of the Holy Rood in 628, the choice would not be so popular during the last eight years of Heraclius, when the provinces that had been rescued from the Persians were passing into the hands of Mahomet's apostles. The vogue may certainly have lasted much longer than six years, but there can be no serious error in attributing to that short

¹ Gibbon, *Decline and Fall of the Roman Empire*, ch. xlvii.

² Figured in *Victoria History of Norfolk*, vol. i.

³ Figured in *Archæologia Cantiana*, vol. iii. p. 45, pl. ii. fig. 3.

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period (628-34) the Wonsheim burial and by inference the deposit of the ewer and tumbler in the mound at Wheathampstead.

The most interesting find in Hertfordshire may therefore be said to point rather to Kent than to any other district on this side of the Channel, and certain remains from Essex may be provisionally interpreted in a similar sense. The dissemination of Kentish types in both counties may be referred to the period when Kent was in her ascendancy, though objects of the same kind discovered in the more immediate vicinity of the Thames might belong to a later date when the Kentish supremacy had given place to East Anglia under Raedwald. According to Mr. Green,¹ that *bretwalda* did not control the country south of the Stour; and it is equally possible that Hertfordshire, in which no distinctive Anglian remains have as yet been discovered, was likewise independent of East Anglia.

Some signs of transition from pagan to Christian rites of burial have been presumably noticed in the county, and it might be supposed that this region, being so near Kent and under the Bishop of London, would at an early date have heard the teaching of the Gospel. On the other hand it must be remembered that 'in no part of England was there so much tenacity of heathenism as in London and the East Saxon realm generally.'² Even St. Cedd, whose Celtic mission succeeded where the Roman Mellitus had failed half a century before, did not apparently gain access to London, as his two seats were on the Essex coast.³ Thirteen years later however, in 666, the see of London was again occupied, for Wini bought it of Wulfhere; and it may be assumed that the Mercian bishop Jaruman, who had been commissioned by his sovereign, had in the interval won over London to the Church. The country bordering the Watling Street cannot have remained much longer without missionaries, and it may be mentioned in this connection that the first council of ecclesiastics was held in 673 at a place that is generally identified as Hertford. Though the place of meeting was no doubt chosen as being fairly accessible from the Akeman, Ermine and Watling Streets, it may be inferred that the neighbourhood was not infested at that time by obstinate pagans. Indeed if it had been there would probably have already come to light some obviously heathen burial, exhibiting perhaps Anglian characteristics; for by that date the Mercian, whose conversion was quite recent and perhaps still incomplete, was paramount in this region, Wulfhere extending his dominion even as far as Sussex between 659 and 675.

Another discovery of Anglo-Saxon relics is supposed to have occurred as early as 1178 at Redbourn, a village on the Watling Street beyond St. Albans. The story goes that the first British martyr himself led the way to two mounds called the 'Hills of the Banners,' where the people were accustomed to assemble, and pointed out one as the sepulchre of St. Amphibalus. Excavations were forthwith undertaken

¹ *Making of England*, i. 269 (1897).

² Canon Bright, *English Church History*, p. 88.

³ Rev. Geoffry Hill, *The English Dioceses*, p. 53.

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by the monks of St. Albans, and in the opinion of an archæologist of much experience, the late Thomas Wright, resulted in the discovery of an Anglo-Saxon burial place, though the interpretation comes more than seven centuries after the incident referred to, which is recorded in detail in the *Archæologia*.¹

In the words of Roger of Wendover, himself a monk of St. Albans, the holy martyr Amphibalus was lying between two of his companions, whilst the third was found lying crossways in a place by itself. They also found near the place six others of the martyrs, making with St. Amphibalus himself ten in all. Among other relics of this champion of Christ were found two large knives, one in his skull and the other near his breast, confirming the account which was handed down from ancient times in the book of his martyrdom. For, according to that book, Amphibalus himself was first disembowelled, then pierced with lances and knives, and finally stoned to death ; for which cause also none of his bones were found entire, though in all the corpses of his companions not a bone was broken. The bones were carefully gathered up and carried in solemn triumph to the abbey church.²

Mr. Wright thought that he could with little trouble adduce from the monastic legends fifty or a hundred distinct examples in which barrows were opened for the purpose of finding the bones of saints, and gives an apposite instance in his *History of Ludlow*.³ It appears that at Ludlow up to the end of the twelfth century the site of the present churchyard, the most elevated part of the hill, was occupied by a very large tumulus or barrow. This was cleared away in 1199 in order to enlarge the church, and three sepulchral deposits, probably in square stone chests, were discovered within. These may be assigned to the Roman period, and recall the interments in the Bartlow Hills ; but the clergy decided that the relics belonged to three Irish saints, the father, mother and uncle of the famous St. Brandan, and accordingly buried them devoutly in the church in expectation of miracles.

In the present instance it was acutely observed by Mr. Wright that the head of the spear usually placed beside a deceased warrior might be easily mistaken for a large knife by the monkish barrow diggers, while a knife at the waist is constantly found with unburnt burials of the pagan Saxons. Adopting this view of their origin, we may draw some further conclusions from these poor relics of the dead, which at the time of their discovery had probably lain in the earth for six centuries. Being perhaps pagan, these presumed Saxons had no special claim to the veneration of the monks and laity, but are of interest for the archæologist of to-day, even though the evidence they could have furnished is minimized by the circumstances of their discovery.

In the first place it is clear that these were unburnt burials ; and that there were no fragments of cinerary urns may be inferred from the silence of the chronicler, for such would not have been overlooked by

¹ Vol. xxxiii. p. 264 ; *Proceedings*, Society of Antiquaries, ii. 27.

² *Flowers of History*, i. 109 (Rolls series). ³ pp. 13-4, cf. p. 28.

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the zealous excavators of the mounds. So far this accords with the division already recognized on other grounds between the Teutonic settlers north and south of the Stour valley, for the East Anglian cemeteries generally yield cremated remains in coarse urns of pottery, which are very exceptional in Kent and not positively known in Essex.

The condition of the remains taken up by the monks may be explained on the supposition that the grave mound, which must in those early days have been a conspicuous object, had probably been rifled before the twelfth century, the bones being disturbed in the process. Perhaps the treasure-seekers, who may have had profitable experiences in Kent, were here disappointed; and after finding nothing of value with the first burial considered it useless to examine the others. It is from these latter that a deduction as to the date of burial is possible. The chronicle of Roger mentions that all the skeletons were not laid in the same direction, some being apparently at right angles to the rest, as was actually found to be the case at Saffron Walden¹ in Essex, thirty miles from the site in question.

In Anglo-Saxon cemeteries the bodies are generally found in one of two positions, either with the head between south and south-west or else due west. Variations between these points may in some cases be due to the time of year when a particular burial took place, as the bearings were taken no doubt by sunrise or sunset.² A generally accepted view is that the east-and-west burials were due to Christian influences, which gradually, perhaps in a century, reformed the funeral customs of the Anglo-Saxon tribes. It is thus permissible to refer the Redbourn interments to a time when that reform was still in progress; and presuming that the monks would have been scandalized to find St. Amphibalus buried with any but the Christian orientation, we may infer that the bodies lying crossways were those of earlier inhabitants who had not been thoroughly Christianized.

The presumed interments at Redbourn therefore seem to be contemporaneous with the Wheathampstead burial, all belonging to the middle of the seventh century. At any rate it is unlikely that the ewer was deposited in a grave much later, for Wulfhere, who ascended the throne of Mercia in 659, was shortly afterwards sovereign not only north of the Thames but even in Sussex. Unlike his great predecessor Penda he was a Christian king, and probably took as much interest in his newly-won territories as Offa, who occupied the same throne during the second half of the eighth century and founded the abbey of St. Albans just before his death in 796.

Half a century of missionary effort had not abolished the pagan practice of burying ornaments and weapons with the dead; but the later we place the Wheathampstead burial the more difficult it becomes

¹ Essex Archaeological Society, *Transactions*, new ser. ii. 284.

² An instructive table of compass-bearings is given by the late Gen. Pitt-Rivers in his account of an Anglo-Saxon cemetery at Winkelbury, Wilts (*Excavations in Cranborne Chase*, ii. 261).

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not only to account for the presence of the ewer and cup but also for the absence of ornaments of Anglian type in association with them.

It is true that Aethelbert's supremacy had passed even before his death in 616 into the hands of Raedwald of East Anglia, but unless and until some traces of Anglian cremation or influence are found in Hertfordshire or Essex, archæology may admit the truth of Mr. Green's view that Raedwald's dominion did not reach further south than the Stour valley. Hertfordshire perhaps fared similarly, and the southern limit of East Anglia in Raedwald's time may have been the Icknield Street, for Anglian remains are plentiful in the extensive discoveries of Hon. R. C. Neville (afterwards Lord Braybrooke) at Wilbraham, Cambs, and a fine square-headed Anglian brooch has been found near Bassingbourn in the same county.¹ In the absence of indications to the contrary it is more reasonable to refer the cremated burials at Wilbraham to the time of Raedwald, who was a pervert from Christianity, than of Wulfhere, who was a staunch upholder of the faith that Penda had trampled on. The discovery in Hertfordshire of a mixed cemetery such as that so richly illustrated in *Saxon Obsequies* would throw much light on the early history of the county; but till that occurs such negative evidence as there is may be accepted.

Besides those already mentioned only one cemetery appears to have been noticed in the county, and there are but slender grounds for determining its precise date. The following seems to be the only record of the find: 'In a field near Sandridge remains have been discovered of a supposed Anglo-Saxon burial ground. A large number of human bones have been found together with iron implements, which are said by local antiquaries to be of Saxon origin. Unfortunately the greater part of the remains, which were discovered by a ploughman, were buried after being shown to a gentleman who pronounced them to be only old bones.'²

Of isolated finds but few have been recorded,³ and are here included more on account of their antiquarian interest than for any historical evidence they can afford. Future discoveries and investigations may however add some importance to the small bronze coins (figs. 3, 4) found in recent years at St. Albans and now preserved in the museum there. They belong to the class called *minimi*, and these particular specimens cannot have been struck before the year 345, when the type here represented was introduced.⁴ The imperfect devices here preserved would not of themselves go far towards identifying the pieces, but there can be little doubt that they are copies, rudely executed, of certain mintages of the Roman emperors, Constantius II. (337-61) and Julian the Apostate (361-3), having on the obverse the imperial head and on the reverse a warrior felling a horseman with his spear. The St. Albans pieces are much smaller than the originals,

¹ In the collection of Mr. William Ransom, F.S.A., of Hitchin.

² *Antiquary*, xi. 132.

³ Sir John Evans' *Archæological Survey of Hertfordshire* has here been of service.

⁴ This and other information has been kindly supplied by Mr. H. A. Grueber, F.S.A., of the British Museum.

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so that the reverse is incomplete, but the outline of the horse and rider as well as the lower limbs of the standing warrior can be distinguished (fig. 3). There can be little hesitation in referring these pieces to a Romano-British mint, possibly at Verulamium, in the fifth century; they may indeed be still later, for the distinctive Anglo-Saxon coinage apparently started with the sceatta about the year 600, two centuries after the withdrawal of the Roman officials from these shores.

Barbarous imitations of Roman coins have been found, together with specimens of Diocletian (284-305) and succeeding emperors, in the neighbourhood of two Roman villas near Boxmoor railway station;¹ and a 'quantity of Roman and Saxon coins'² found at Hexton may have included some of the same kind. As parallel instances are needed to throw light on this somewhat obscure subject reference may here be made to a discovery of the same kind in the parish of Whittington, Gloucs., where among a total of 700 or 800 were found Romano-British specimens of the period subsequent to Arcadius (395-408).³

These rude attempts may be contrasted with two interesting pieces found in Hertfordshire, which may be said show the Anglo-Saxon moneyer at his best (figs. 5, 6). Coins of Offa (757-96), the first to introduce the penny into England, are common enough, but one is here illustrated to accompany a rare specimen of his widow Cynethrith (796).⁴ Both coins are from the neighbourhood of Hitchin, the latter having been discovered by a working man and sold to a cobbler in that town at the end of the eighteenth century. The locality is not of great importance for coins of that date, when intercourse between the various English kingdoms was easy and extensive, but it may be of interest to note that coins of Offa and his wife have also been discovered not far apart in Sussex.⁵

As long ago as 1744 a gold ornament, described in Gough's edition of Camden's *Britannia*⁶ as a torc, was found at Park Street near St. Albans. The original drawing is repeated in the *Journal* of the Archaeological Institute⁷ for 1849, but is unsatisfactory and leaves the true nature of the object uncertain. It is however about an ounce heavier than the gold armlet in the British Museum from Wendover, with which it has been compared. It may have been used for the same purpose, and if the parallel is just, belongs to the Viking period, as the three centuries between 700 and 1000 are usually designated.

At the west end of the Abbey church a coin of Charlemagne (768-814)⁸ was found nearly half a century ago, and from Boxmoor a circular brooch⁹ of cast bronze (fig. 7), the centre of which comes is

¹ Society of Antiquaries, *Proceedings*, ii. 295.

² Lewis, *Topographical Dictionary*, under Hexton.

³ Society of Antiquaries, *Proceedings*, 2nd ser. ii. 305.

⁴ Both are from the cabinet of Mr. William Ransom, who has kindly lent them for illustration.

⁵ *Sussex Archaeological Collections*, xv. 242; xxi. 219.

⁶ Vol. vi. p. 48, fig. 2, and p. 52.

⁷ Vol. i. p. 347, pl. xvii. fig. 9.

⁸ Figured in Nicholson's *Guide to the Abbey* (Wm. Page's edition), p. 50.

⁹ In the collection of Sir John Evans, K.C.B., who has kindly lent it for illustration. Society of Antiquaries, *Proceedings*, iii. 41.

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a rough copy of a coin which cannot be identified with certainty. At the back is a similar reproduction of the reverse of the same or another coin, which may have been a Merovingian copy of a coin of Carausius (287-93) minted by Childebert or Dagobert in the second half of the seventh century. This however does not fix the date of the brooch, which from comparison with others in the British Museum and elsewhere¹ with broad beaded borders appears to belong to the ninth or tenth century, when Anglo-Saxon art had become extinct, and new forms, introduced from the continent, foreshadowed the Norman conquest of our island.

¹ Several are figured and described in *Journal of British Archaeological Association*, ii. 313.

DOMESDAY SURVEY

HERTFORDSHIRE is one of a group of counties which are surveyed at considerable length in Domesday Book. With the surveys of Bedfordshire and of Cambridgeshire to the north, and of Middlesex to the south, its own has certain points in common, which render it desirable to keep them in view while engaged upon its study. Essex, to the east, is surveyed in that other volume of Domesday which is compiled on a different system, and affords therefore little facility for comparison. It must be remembered that in Domesday Book we have only a compilation from the original returns for Hertfordshire, not the actual returns themselves. These returns were more extensive than those which are preserved in our great record, and were drawn up on a system altogether different. A separate return was made for each Hundred of the county, at the head of which were placed the names of the sworn residents by whom it was made. And the villis within the Hundred were surveyed one by one. With these returns the compilers of our record dealt in drastic fashion. They left out the names of the jurors; they cut down the contents of the returns by omitting certain classes of information; and they then arranged all that was left under the names of tenants-in-chief, breaking up the geographical arrangement and considering only the tenure of the estates.¹

For Hertfordshire we are fortunately afforded a glimpse of these original returns quite exceptional in its nature. In response, as I hold, to a writ of the king, the abbey of Ely made use of these returns, which were still in existence at the time, to draw up a list of its possessions which gave their contents in full.² As the abbey happened to possess three manors in Hertfordshire—Hatfield, Hadham, and Kelshall—we obtain for these manors the full contents of the returns,³ and are able to compare them with the information given in Domesday Book. I print below, to illustrate the difference, a translation of the full return for Hatfield in the *Inquisitio Eliensis* by the side of Mr. Ragg's translation of the Domesday entry for the manor :—

¹ For fuller details of this process see the paper on 'Domesday Book' in my *Feudal England*.

² *Ibid.*

³ They are printed in the 'Additamenta' volume of the Record Commission's *Domesday Book* (iii. 509–10), and in Hamilton's *Inquisitio Comitatus Cantabrigiensis*, pp. 124–5.

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IN THE TWO HUNDREDS OF BRADEWATRE

The abbot of Ely holds **HATFELD**. It is, and was T.R.E., assessed at 40 hides. There is land for 30 ploughs. There are 2 ploughs and 20 hides in demesne, and there could be 3 (ploughs) more. (There are) 20 ploughs of the men, and there could be 5 more. (There are) 18 villeins, each of 1 virgate, and a priest (who has) half a hide, and 4 men of 4 hides (in all). And Adam son of Robert son of William (has) 2 hides under the abbot. (There are) 12 bordars of half a hide (in all), and 6 other bordars of half a hide (in all), 12 cottars, 6 serfs; 4 mills worth (*de*) 46 shillings and 4 pence. Meadow for 10 plough teams; pasture (sufficient) for the live stock of the vill; woodland for 2,000 swine. From wood (*bosco*) and pasture (come) 10 shillings. (There are) 26 cattle (*animalia ociosa*), 360 sheep, (and) 60 swine. Altogether it is worth 25 pounds; when received, 25 pounds; T.R.E., 30 pounds. This manor belonged, and belongs, to the church of Ely in demesne (*Inq. Eliensis*).

IN BRADEWATRE HUNDRET

The abbot of Ely holds **HETFELLE**. It is assessed at 40 hides. There is land for 30 ploughs. In the demesne are 20 hides, and there are 2 ploughs on it, and there could be 3 more. A priest there and 18 villeins and 18 bordars have 20 ploughs between them, and there could be 5 more. There are 12 cottars and 6 serfs, and 4 mills worth 47 shillings and 4 pence. Meadow is there sufficient for 10 plough teams; pasture sufficient for the live stock; wood to feed 2,000 swine; and 10 shillings are the dues from wood and pasture. Altogether its value is, and was, 25 pounds; T.R.E., 30 pounds. This manor belonged, and still belongs, to the demesne of the church of Ely (*Domesday*).

It will be seen at once that Domesday Book here omitted two departments of information found in the returns. One was the classifications of the villagers according to the extent of the holding; the other was the amount of livestock apart from the plough oxen (whose teams were comprehended in the word 'plough'). The fact that the original returns did comprise the livestock is of value as confirming the statement of our native chronicler that there was not 'so much as—it is shame to tell, and he thought it no shame to do—an ox nor a cow nor a swine that was not set in his writ.' Moreover in Essex, to the east of our county, Domesday Book retained this item of information throughout. The other item, which is of some importance, was preserved by it in Middlesex, to the south, and will therefore be most fitly discussed when dealing with the survey of that county. Here it need only be observed that on the three Hertfordshire manors the villeins are all returned as holding a virgate or half a virgate, while the priest at Hatfield has half a hide, or twice as much as any villein. It should however be noticed that, as will be seen below (p. 332), Domesday itself, in the solitary case of the great manor of Sawbridgeworth, records the classification found in the original return. From the priest with his 'hide,' and the reeve with his half 'hide,' the scale ranges down through the villeins with their virgates and half virgates, to the bordars with their 8 acres apiece and the cottars with one or none.

But the instructive inclusion of these items is not all that is done for us by the *Inquisitio Eliensis*. It further records the names of the sworn men of the Hundreds; and, as the abbot of Ely's manors lay in three

THE DOMESDAY SURVEY

different Hundreds, we obtain the names of the jurors for each.¹ We have eight jurors apiece for the Hundreds of Edwinstree and Odsey, and sixteen for the double Hundred of Broadwater. I have elsewhere shown that the number named was eight for each Hundred, of whom four were evidently natives and four were new settlers.² In these three Hertfordshire Hundreds one can identify several of the jurors, and it is interesting to find the Normans and the English making their return jointly. In one case an actual tenant-in-chief, namely Goisbert de Beauvais, is found among the sworn men; and in the same Hundred, that of Broadwater, two of Robert Gernon's tenants, William of Latchworth (a Norman) and Ælfward of Mardley (an Englishman), are found as jurors together. Two tenants of Geoffrey de Mandeville can be recognized among the names—namely Thorkill, a native, who is named, from his holding only, 'of Digswell,' which estate he had held before the Conquest of Geoffrey's predecessor; and Germund, who held of him two estates in Broadwater Hundred, but retains his Norman name as Germund de St. Ouen. This mention of his surname, which is not found in Domesday, is an interesting piece of information, for earl Geoffrey de Mandeville's return in 1166 records that a 'Germund de St. Ouen' had held of him four knights' fees.³ The English jurors are harder to identify, being probably of lower status, at least in Norman eyes. But of one of these we shall hear again, for Godwine 'de Horemere' was the English tenant who held at Hormead of no less a man than Eadgar the Ætheling himself.

Returning now to Domesday Book, we may say that its Hertfordshire portion presents three features of special interest. Of these the first is the occurrence under Edward the Confessor of the class of small holders known as *sochemanni*, and its almost total disappearance under William the Conqueror. The second is the peculiar, if not unique, development of the great manor of Hitchin. And the third is found in the personality of the chief landowners, English and Norman, and the devolution of their lands. In addition to these leading features, the relation of assessment to value, the state of cultivation in the county, and its density of population will all deserve attention; and there are as usual many entries of miscellaneous interest.

It is frequently stated that the Norman Conquest affected only the English thegns—the 'landed gentry' as we should now say—by the confiscations it involved; but Professor Maitland's researches have shown that, at least in the east of England, it involved the sharp depression of that class of *sochemanni*, whom he speaks of as 'very small people with very little land . . . peasants, at best yeomen.'⁴ The occurrence of this interesting class is geographical in character; it is virtually restricted to a certain district. Roughly speaking, we find *sochemanni* spreading like a fan, of which the handle is the Wash, and penetrating south into Hert-

¹ Domesday Book (as above), iii. 498; and Hamilton's *Inquisitio*, p. 100.

² *Feudal England*, pp. 118-23.

³ *Red Book of the Exchequer*, p. 345.

⁴ *Domesday Book and Beyond*, p. 64.

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fordshire and Essex and south-west into Northamptonshire. Nor is it only for the *socbemanni* that this district is remarkable. It was, in the same writer's opinion, considerably 'richer and more populous' than the western portions of the kingdom, as it was also 'the home of liberty.'¹ In tracing therefore, in Hertfordshire, the occurrence of *socbemanni* and the widespread subdivision of the vills in the days before the Conquest, we are dealing with no isolated phenomenon, but with the links that connect the county with the district to its north-east, and with influences which had made it even then comparatively populous and wealthy.

'Domesday Book is full of evidence that the tillers of the soil are being depressed.' Professor Maitland, who has told us this, observes that

the most convincing proof of the depression of the peasantry comes to us from Cambridgeshire. . . . The Cambridgeshire of the Confessor's day had contained at the very least 900 instead of 200 sokemen. This is an enormous and a significant change. . . . The sokemen have fallen, and their fall has brought with it the consolidation of manorial husbandry and seignorial power. . . . No one can read the survey of Cambridgeshire without seeing that the freer sorts of the peasantry have been thrust out or rather thrust down.

Evidence so cogent as this we shall hardly find in any part of the record save that which relates to Cambridgeshire and Bedfordshire. But great movements of the kind that we are examining will hardly confine themselves within the boundaries of a county. . . . In Essex we may see the *liberi homines* disappearing. . . . There have been sokemen in Middlesex and in Surrey, but they have been suppressed. . . . Even in Suffolk they are suffering ill at the hands of their new masters, while in Cambridgeshire, Bedfordshire, Hertfordshire they have been suppressed or displaced.²

It can, I think, be shown that the decrease in the number of sokemen, as a result of the Norman Conquest, was proportionately even more striking in Hertfordshire than in Cambridgeshire itself. If we leave out of account the royal manor of Hitchin, which presents exceptional features, there were little more than 20 sokemen left in the whole county at the time of the Domesday Survey. And yet there had been no fewer than 195 under Edward the Confessor.³ It was out of the question that Professor Maitland, writing on the whole of England, should be able to study minutely the Survey of each county, but a close examination of the Hertfordshire evidence has convinced me that the bulk of the sokemen are found in the extreme north and east of the county, forming, as it were, a fringe extending from Lilley to Hoddesdon, with Essex and Cambridgeshire as a kind of centre.

Starting from Royston and working south, we have 6 sokemen at Barley, 4 at Barkway and 2 at Newsells in Barkway, 6 at Hodenhoe in Buckland, 9 at Widiell, 6 at 'Ichetone' in Layston, 4 at Stonebury, 3 at Barksden Green to the west of it, and 1 at Westmill. Between these last places and the Essex border were Boreson Green ('Bordesdene') with 13, Hormead with 7, and Pelham with 5. We have thus accounted for 66 sokemen before the Conquest in the north-eastern

¹ *Domesday Book and Beyond*, pp. 22-3.

² *Ibid.* pp. 62-4, 67.

³ But, as Professor Maitland warns us (p. 20), 'there is reason to think that some of the freemen and sokemen of these counties get counted twice or thrice over, because they held land under several different lords.'

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corner of the county alone. To the south of it, in our county's extreme east, we have 15 at Hadham with Wickham, 6 at Standon, and 5 at Sawbridgeworth. Following down the Essex border, we have 15 at Stanstead, 1 at Hoddesdon, and 1 at Broxbourne. These raise the above total to 109; and if we add the 10 at Bengeo, 1 at Ware, and 8 at Sacomb, we may roughly say that two-thirds of the sokemen, outside Hitchin, are found to the east of a line drawn from Royston to Hertford and thence to Broxbourne. And of the remainder, the majority are found in the extreme north of the county. At Hinxworth there were 9, at Bygrave 2, at Clothall 5, at Wallington 3, at Latchworth 3, and at Pirton 2, while those at Offley, Wellbury, Dinsley and Wymondley are mentioned under Hitchin. Passing eastwards again, we have 1 at Graveley, 3 at Luffnells, and 2 at Throcking, which brings us back to Layston and to Barksden Green.

It is interesting to observe that, as we might expect, the sokemen of Hertfordshire are mainly found in the districts adjacent to the counties where they were very numerous. For this is a further proof that the tenure was distinctive of a region, and, as Professor Maitland has observed, 'the faults (if any faults there be) in a truly economic stratification of mankind are not likely to occur just at the boundaries of the shires.'¹

But who, it may be asked, were the 'sokemen' who had thus overflowed into the county? Although their name is derived from soke ('soche'), that is from the right of jurisdiction (or the profits of jurisdiction) that some one possessed over them, their exact character is obscure.² It should however be explained, for the comprehension of the Survey, that a sokeman might be the 'man' of one lord, though his 'soke' belonged to another. Moreover, Domesday persistently draws a distinction between two kinds of tenure, although the terms in which it expresses that distinction vary a good deal. Of one class of holders we read that they were free to sell (or to assign) their land, or to 'withdraw with their land' without leave (*licentia*); of another, that they could not do this without the leave of their lord. I have argued from the Cambridgeshire evidence that the land held by the latter was what was known as 'thegmland,' while the other class held 'socland.'³ Another point of importance revealed by the Hertfordshire Survey is that the sokemen had in some cases been already 'in a manor' before the coming of the Normans, while in others they had been annexed since then to a manor to which they had not belonged. For instance, 3 sokemen (of the king), who were the 'men' of archbishop Stigand, were after his death annexed with their land to bishop Odo's manor at Clothall, although 'they were not there T.R.E.' (fo. 134). At Tring, according to the witness of the men of the Hundred, Engelric, of whom we shall hear again, had not only annexed to his manor 2 sokemen, with their 2

¹ *Domesday Book and Beyond*, p. 140.

² For a full discussion of the *sochemanni*, see Professor Maitland's *Domesday Book and Beyond*.

³ See for all this my *Feudal England*, pp. 22-6, 28-35.

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hides, 'since the coming of king William,' but had forced a 'man' of the abbot of Ramsey, who held 5 hides, to undergo the same lot, although he had no power to alienate his land from the abbey and had not belonged to the manor. Domesday's phrase for this is that he 'was not there' (fo. 137), but this only means that he did not belong to the manor. On the other hand, there did belong to the manor T.R.E. 3 sokemen, in so far as they were even then the 'men' of Engelric, and these 3 were still there in 1086, holding 1 hide between them. At Wickham Geoffrey de Mandeville annexed a sokeman with a minute holding to Thorley, 'where he was not T.R.E.' (fo. 140). Again, at Ware 2 sokemen 'have, since the coming of king William, been annexed (*appositi*) to this manor, to which they did not belong T.R.E. says (the court of) the shire' (fo. 138b). Here the noticeable point is that one of them, who held 2 hides and had 'power to sell,' was a man of 'Anschil of Ware,' the lord of that great manor, and yet did not 'belong to it.' An extreme case of the same kind was testified to by 'the Hundred' at Hormead (fo. 142). The Norman sheriff Ilbert, says Domesday, had there increased a manor of $1\frac{1}{2}$ hides to $6\frac{3}{4}$ hides by annexing to it $3\frac{1}{4}$ hides which had been held by 7 sokemen of king Edward and 2 hides which had belonged to 'men' of Ansgar the staller and Æthelmær of Bennington, though none of these men had belonged to the manor (*non fuerunt ibi*) T.R.E. This is one of those cases in which the Domesday Survey means precisely the opposite of what it seems to say, for these men, though not of the manor, had 'been there' as individuals under Edward the Confessor, and what Ilbert had really annexed to the manor was, not the men, but their lands. In 1086 the peasantry existing on the manor ranged downwards from the villein to the serf; of sokemen or free tenants no trace remained. As against these cases we have two definite entries of sokemen existing within a manor even before the Conquest. At Sacombe 4 hides were held 'as a manor' by Æthelmær, and 'in the manor that Æthelmær held there were 4 sokemen,' holding about a hide. All 4 were the 'men' of Æthelmær, but 'king Edward had sake and soke over 2 of them' (fo. 141). And of Standon, a manor of archbishop Stigand, we read that 'in this manor there were 6 sokemen' (fo. 142b).

The cases of annexing to a manor the lands of sokemen not belonging to it, by which these last two were preceded, will have prepared us for those in which a Norman manor was composed altogether of lands which had been held by sokemen. The two Hertfordshire manors selected by Professor Maitland are (though he does not name them) Tiscott, near Tring, and Widiell.¹ Now the case of Tiscott is of special interest, because we can account for the 'commendation' of the small landowners who held it under the Confessor. Its '4 hides' were then in the hands of 5 sokemen, of whom 2 were the 'men' of Brihtric (lord of the great neighbouring manor of Masworth, Bucks), 2 of Oswulf son of Frane, whose great manor of Miswell lay to the south-east, and

¹ *Domesday Book and Beyond*, pp. 137-8.

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1 of Eadmer 'atule,' who was lord of Berkhamstead beyond. One of the 5, says Domesday, 'bought his land from king William for £36,¹ as the men of the Hundred bear witness, and afterwards betook himself to Wigot for protection' (fo. 137). Why did he do this? Because, in my opinion, Wigot had obtained at the Conquest the above manor of Masworth, which was held in 1086 by his son-in-law, Robert d'Ouilly. The result was that Robert d'Ouilly, with no better claim than this, secured all Tiscott. At Widiāll 9 sokemen had held, in various proportions, $5\frac{1}{2}$ hides; all their holdings are found, in 1086, forming a single manor for Hardwin de 'Scalers,' a manor on which we find in 1086 nothing higher than a villein (fo. 141b). It was characteristic of Hardwin to absorb the holdings of sokemen; 33 of them had existed on his own fief alone. Professor Maitland comments on the Widiāll case: 'Manors we see in the making; Hardouin has made one under our eyes.' Some of the holdings of the sokemen were very small; at Wickham, on the Essex border, 3 of them held but $2\frac{1}{8}$ hides between them, and 3 others no more than three-eighths of a hide in all (fo. 133b). So also at Datchworth five-eighths of a hide were held by 3 sokemen (fo. 140), while at Barksdon even one-quarter of a hide was divided between 3 sokemen, each of whom was commended to a different magnate, one of them having the half of this tiny holding, and the others a quarter each (fo. 141b). Such were the small holders of land who were crushed out at the Conquest. What became of them we can only guess; but that many, if not most, appear among the villeins of Domesday seems highly probable. And yet this class had been so free that they could largely choose to what lord they would commend themselves; and at Standon one could even sell, not only his land, but the 'soke' with it (fo. 142b). But let us turn to those sokemen of whom the king alone had soke.

In Domesday the *avera*, or carrying service, is distinctive of the two counties of Cambridgeshire and Hertfordshire, and in Hertfordshire it occurs more frequently than would at first sight appear. Its occurrence, when explained, is of considerable importance, for it denotes that the tenant from whom it was due was 'of the king's soke,' or 'a sokeman of the king.' Further, this service was actually performed if the king visited the county, and if he did not it was commuted. Now two facts can be definitely proved as to the Hertfordshire *avera*; the first is that it was due at the rate of 1 *avera* from each hide, and the second is that the commutation for 1 *avera* was 4d. The importance of this conclusion will be seen below. But let us take some instances. At Throcking a hide and a half were 'of the king's soke'; the two brothers who held it paid the sheriff '6d. or 1 *avera* and a half' (fo. 133b). 'Sutrehele' was a much divided vill; in it a man of Ansgar the staller, who was 'of the king's soke,' held 2 hides and 'used to render to the sheriff 2 *averæ* or 8d.' (fo. 134b). In the same vill 2 sokemen held $1\frac{3}{4}$ hides; they were both 'men' of Æthelmær of Bennington, but the

¹ This appears an enormous sum for its redemption.

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one who held three-quarters of a hide was 'of king Edward's soke,' and so he 'used to find three-quarters of an *avera* or 3*d.* for the sheriff' (fo. 141). Again, in the same vill 2 sokemen, 'men' of earl Leofwine, but 'of king Edward's soke,' 'used to find 1 *avera* or 5 $\frac{1}{4}$ *d.* a year for the sheriff' (fo. 134). Is then the *avera* here commuted for more than 4*d.*? No; we find that their holding was 1 $\frac{1}{3}$ hides, from which the sum due would be 5 $\frac{1}{4}$ *d.* as recorded. Advancing a step we find that, of an estate in this vill held by 4 sokemen, half a hide was held by one of them, a 'man' of Leofwine 'scova,' who 'used to find half an *avera* or 2*d.* for the sheriff' (fo. 134*b*). Why? Because, we reply, he was a king's sokeman, though the fact is not stated. Let us take a further step. Lower down in the same column we read that there had been annexed to Clothall '2 sokemen, men of archbishop Stigand, holding 2 hides and 3 virgates, who did not belong to the manor T.R.E. . . . and who rendered by custom 11*d.* a year to the sheriff.' Why? Because, we reply, they were king's sokemen, liable for an *avera* or 4*d.* from each hide, and therefore for 11*d.* from their holding (2 $\frac{2}{3}$ hides).

With this clue to guide us we are enabled to detect a greatly increased number of king's sokemen. Of 7 hides at Stanstead held by 14 *sochemanni* 3 hides were held by 7, 'who rendered by custom to the king's sheriff 12*d.* a year' (fo. 138*b*). At Newsells a sokeman, who was the 'man' of Ealdred, held 1 virgate and 'rendered 1*d.* a year to the sheriff' (fo. 139). In Thorley Edzi, 'a man of Goded,' held half a hide and 'used to render 2*d.* to the sheriff' (fo. 134). At Hinxworth 4 'men' of Æthelmær of Bennington had 1 hide and 1 virgate and 'used to render 5*d.* a year' (fo. 141*b*). This entry is vague enough, and yet we may confidently say that they were 'of the king's soke' and that they rendered this sum to the sheriff as a commutation for *avera*. So too with the 7 *sochemanni* who held 3 hides and a virgate at Hormead and 'rendered 13*d.* a year to the sheriff' (fo. 142). Even 'Ælfward of Mardley(bury),' who figures in Domesday among king William's thegns, is proved in this way to have held as a sokeman his land 'in Rodenehangre,' for what he held there was 3 virgates, and 'he used to render to the sheriff 3*d.* a year' (fo. 142*b*).

There are cases, no doubt, in which at first sight the *avera* is not reckoned as worth 4*d.* At Knebworth, for instance, a 'man' of Aschil 'used to find 1 *avera* when the king came into the shire, and used to render 5*d.* if he did not' (fo. 139). But as his holding was 1 $\frac{1}{4}$ hides the 4*d.* rule proves correct. Again at Lilley a sokeman, who was a 'man' of Harold, 'rendered in Hitchin 1 *avera* or 3 $\frac{1}{2}$ *d.*' (fo. 140); but when we find that his holding was 3 $\frac{1}{2}$ virgates we see that the rate here also was 4*d.* from the hide. These cases are accounted for by the scribe writing '1 *avera*' instead of '*avera*' simply. The right calculation is seen at such places as Widiáll, where 7 sokemen 'had 2 hides and 1 virgate,' and 'found yearly for the sheriff 9*d.* or 2 *averæ* and the fourth part of 1 *avera*' (fo. 141*b*). The commutation of the *avera* for 4*d.* a hide in Hertfordshire contrasts strangely with the rule in Cambridgeshire,

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the other county where the *avera* prevailed. There is abundant evidence that its value was there reckoned at 8*d.* In the Hundred of Staplehoe 2 sokemen who held 2 hides at Chippenham 'found, each of them, 8*d.* or 1 horse in the king's service' (fo. 197); on another manor each sokeman 'found 1 horse for *avera* or 8*d.* yearly';¹ on another 2 sokemen 'used to find *avera* or 8*d.* yearly';² and on a fourth a sokeman who had only a virgate 'found *avera* or 8*d.*' (fo. 196*b*). This last entry may serve to illustrate another difference between the two counties; for, while in Hertfordshire the hide was the unit from which an *avera* was due, in Cambridgeshire we cannot detect any such uniform unit.

But let us turn to the 'inward.' At Wratting, in another Cambridgeshire Hundred, we find a valuable entry; 3 hides in that vill were held by 10 sokemen, 'of whom 6 used to find *averæ* and 4 *inguard*, if the king came into the shire; if (he did) not, they used to render 8*d.* for (an) *avera* and 4*d.* for an *inguard*' (fo. 190*b*). There is sufficient evidence in Cambridgeshire to prove that an *inward* or *inguard* was reckoned at 4*d.*, but a noteworthy entry under Fulbourne tells us that there 4 hides were held by 26 sokemen who 'render . . . yearly 12 horses and 12 "inguards" if the king should come into the county, (and) if he should not come 12*s.* 8*d.* They used to render to the sheriff T.R.E. only *averæ* and "inguards" or 12*s.* 8*d.*' (fo. 190). Here the commutation seems 8*d.* too much, but as the sokemen were 26 in number, not 24, I believe that there was a slight error both in Domesday and in the original returns,³ and that 12 of the sokemen rendered *averæ* and 14 of them 'inguards,' which would make the sum exactly right. It has been necessary to illustrate by this Cambridge evidence the Hertfordshire *averæ* and 'inwards,' but in the latter county the 'inwards' are far more rarely mentioned and are indeed restricted to Hitchin and its sub-manors (fo. 132*b*). The *avera*, which was so common in Hertfordshire, was, as we learn from the Cambridgeshire entries, essentially service with a horse; and so I believe was the 'inward.' A useful parallel is found in the services due to the abbot of Ely from his sokemen in East Anglia, as recorded even before Domesday; they had to carry to the abbey the food for the monks' support, and to place their horses at the abbot's disposal as often as he would.⁴ The *avera* was a duty of much consequence in mediæval times.⁵

There is a close connection between *avera* and 'inward' and the second of the subjects I mentioned at the outset, namely the peculiar

¹ *Inquisitio Comitatus Cantabrigiensis*, p. 4.

² *Ibid.* pp. 8-9.

³ For instances of such errors as this ('xii.' for 'xiii.') see my *Feudal England*.

⁴ 'Portabunt victum monachorum ad monasterium,' etc., etc. (*Feudal England*, pp. 31-3).

⁵ See Vinogradoff's *Villainage in England*, pp. 285-6: 'A very important item in the work necessary for mediæval husbandry was the business of carrying produce from one part of the country to the other. . . . The obligation to provide horses and carts gains in importance accordingly,' etc., etc. An idea of the character of *avera* is given by an entry in the *Bleadon Customal*, cited in Seebohm's *English Village Community* (p. 57): 'Et idem facit *averagium* apud Bristoll' et apud Wellias . . . cum *affro* suo ducente bladum domini, caseum et lanam, et cetera omnia quæ sibi serviens precipere voluerit.' The commutation of this service for the payment of a certain number of pence, which is so frequent in the Hertfordshire Domesday, gave rise to the term 'averpenny,' which is often met with in mediæval documents.

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development of the great manor of Hitchin. Although it is not mentioned by Professor Maitland among the typical enormous manors, it was 'farmed' as a whole, at the time of the Survey, for considerably over £100, a sum which certainly entitles it to rank with Leominster, Berkeley, Tewkesbury, Taunton, Rothley and the others mentioned by that learned writer.¹ The aggregate spoken of by Domesday as 'Hiz with its appurtenances' is not actually styled a manor, but other lands and manors are spoken of as 'in' it, which shows that it was recognized as an integral whole. The early history of Hitchin is unfortunately obscure. Mr. Seebohm, whose well-known researches have made its name famous, states that 'from the time of Edward the Confessor—and probably from much earlier times—with intervals of private ownership, it has been a royal manor.'² But Domesday shows it in the hands of Harold under Edward the Confessor and does not say anything of its having belonged to the Crown. Hitchin itself, the nucleus of the group, was assessed at only 5 hides, although it is credited with no fewer than 34 ploughlands, a most disproportionate number. Moreover Domesday distinctly states that 'of these 5 hides' 2 belonged to what was afterwards the rectory manor, which had in 1086 4 ploughlands of its own. In spite of the confused form of the entry it seems clear that the chief manor had 34 ploughlands and was assessed at only 3 hides. Harold, who held not only this, but also, suspiciously enough, the manor belonging to 'the minster of the vill,'³ is charged in the very first entry in the survey of the shire with having despoiled the nuns of Chatteris of an 8-hide manor at Wymondley and placed it 'in his manor of Hitchin' (fo. 132) three years before the death of king Edward. This is one of a class of entries that raise a curious question. Mr. Freeman, with his well-known bias in favour of Harold, tried to minimize their weight;⁴ but Professor Maitland holds that 'a great deal of simple rapacity is laid to the charge of Harold by jurors whose testimony is not to be lightly rejected.'⁵ In this case it is distinctly stated that 'the whole shire' bears witness to the fact, and I would point out that it was not to the interest of William, as Harold's heir, to encourage entries which impugned the validity of Harold's rights, and which thereby stamped William himself as holding lands stolen from the church.

But it was not only or even chiefly the church that suffered wrong. At Hexton, it is true, Harold is charged with placing 'in Hitchin by force and wrongfully, as the shire witnesses,' land which had been held by a 'man' of St. Alban's Abbey (fo. 133); but the additions made by him were much exceeded by those for which the Norman sheriffs were responsible under the Conqueror. The fact, moreover, that William's sheriffs were usually themselves barons led to occasional confusion between

¹ *Domesday Book and Beyond*, pp. 112-4.

² *English Village Community*, p. 1.

³ It should be observed that it so belonged in 1086, and that its value is separately entered, unlike that of the other constituents of the group. I infer from this that it had been taken out of that group and restored to the church of Hitchin. It is not likely to have been given as a fresh endowment by William, and if it had been, the fact would probably have been mentioned by Domesday.

⁴ *Norman Conquest* (1870), ii. 547-9.

⁵ *Domesday Book and Beyond*, p. 168.

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their own manors and the king's. In Hertfordshire at least this was the case, for Ilbert the first Norman sheriff, who had added several manors to Hitchin, had also increased his own fief, which is found at the time of the Domesday Survey in the hands of Geoffrey 'de Bech' (fos. 132*b*, 133, 140). It will be seen in the text below that there were awkward questions as to whether he had held certain lands as a tenant-in-chief or merely as the king's officer farming them for the Crown. To the 5-hide manor of Lilley his title was unchallenged, but Leofgifu, an English-woman who had held that manor under Harold, also held an estate at Wellbury near by, under Harold. Ilbert took advantage of being sheriff to add this to Lilley, but 'after he lost the shrievalty, Peter de Valognes and Ralf Talgebosc took it from him and put it in Hitchin, as the whole shire bears witness, though it did not belong there or render any due (there) T.R.E.' (fo. 133). Much the same incident is recorded under Dinsley. This was a considerable estate which had been held of Harold by 2 sokemen 'as 2 manors'; Ilbert held it 'as 1 manor' in virtue of the king's writ, and was seised thereof so long as he was sheriff, but, when he ceased to be sheriff, Peter and Ralf 'took the manor from him and put it in Hitchin because he would not find *avera* for the sheriff' (fo. 132*b*). The Domesday jurors, as to this point, returned that each of the above sokemen used to supply 'ii averas et ii inward' in Hitchin 'but by compulsion and unjustly,' such compulsion of course being laid to Harold's charge.

It will be observed that in this dispute the liability to render *avera* and inward 'in Hitchin' played an important part; and in this connection there are two peculiarities deserving special notice. The first is that in this county it is only at Hitchin that we hear of 'inward'; and the other, that *avera* was rendered 'in Hitchin,' that is to Harold, instead of to the king's officer as elsewhere in the shire. Of the two estates which Ilbert retained for himself in the Hitchin half-Hundred we read that the hide at Hexton had been held by a man whose 'soke belonged to Hitchin and who provided there 1 *avera*,' and that seven-eighths of a hide in Lilley were held by a sokeman who 'rendered 1 *avera* in Hitchin' (fo. 140). The 6 sokemen who held the Offleys in the days of Edward the Confessor provided *averæ* and inwards, but it was Ilbert who first 'put them and their lands in Hitchin' (fo. 133). It was he also who added to Hitchin the two halves of (King's) Walden, where Domesday again records the finding of *avera* and inward 'by compulsion and unjustly' (fo. 132*b*), though in this case for 'the king's service.' Of Peter de Valognes, the sheriff in 1086, we read that he included in the Hitchin group of manors a hide at 'Welei' which Ilbert had given to a knight of his own while he was sheriff and which 'did not belong to Hitchin or render any due there in the time of king Edward' (fo. 133). From this it would seem that the liability to render *avera*, for instance, in Hitchin provided an excuse for annexing an estate which had not really 'belonged to' Hitchin.

The action of the king's officers at Hitchin had parallels in other

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places. In south Bedfordshire, for instance, not far off, we read of Ralf Taillebosc, of whom we heard above, adding to the king's manors of Leighton, Houghton and Luton lands which had not belonged to them under Edward the Confessor (fos. 209, 209*b*), while in the same county he had swept into the hands of the king's reeves a number of small estates which had been held by sokemen or by thegns (fo. 218*b*).¹ In such cases the king would expect to receive an increased rent (*crementum*) in consideration of such addition. The Hitchin group of manors was 'farmed' by the sheriff as a whole, and consequently Domesday records its value at the end of the whole group. It should be carefully observed that Hitchin itself (as apart from the rectory manor) is not separately valued, nor are its old appurtenant estates; but those which had been added to Hitchin by Harold or by Norman sheriffs have their values recorded, except in the case of Wymondley. It may also be noted that the value of the sokemen appurtenant, under the Confessor, is reckoned separately from that of 'Hitchin,' as was also the case with the great royal manor of Rothley in Leicestershire (fos. 230, 230*b*).

The third of the features I described above as of special interest in Hertfordshire is the light that the Domesday Survey throws on the personality of its landowners. We are even now but feeling our way to an understanding of the system on which land was held in England on the eve of the Norman Conquest. For we have to view that system through the eyes of Norman barons accustomed only to feudal institutions and seeing everywhere dependent tenure and the 'manors' to which they were used. And it is now recognized that, under the Confessor, there were tendencies, if not developments, which gave them to some extent an excuse for taking the view they did. In one of those brilliant passages by which he has illumined the subject Professor Maitland writes as follows—

If now we look at that English state which is the outcome of a purely English history, we see that it has already taken a pyramidal or conical shape. It is a society of lords and men. At its base are the cultivators of the soil, at its apex is the king. This cone is as yet but low. Even at the end of William's reign the peasant seldom had more than two lords between him and the king, but already in the Confessor's reign he might well have three. . . . Still a great change took place in the substance of the cone, or if that substance is made up of lords and men and acres, then in the nature of, or rather the relation between, the forces which held the atoms together. Every change makes for symmetry, simplicity, consolidation. Some of these changes will seem to us predestined. . . . If England was not to be for ever a prey to rebellious and civil wars, the power of the lords over their men must have been—not indeed increased, but—territorialized; the liberty of 'going with one's land to whatever lord one chose' must have been curtailed. As yet the central force embodied in the kingship was too feeble to deal directly with every one of its subjects, to govern them and protect them. The intermediation of the lords was necessary; the state could not but be pyramidal; and while this was so the freedom that men had of forsaking one lord for another . . . was akin to anarchy.²

¹ A further illustration is afforded by a Norfolk entry (ii. fo. 114*b*): 'To this manor were added 2 free men by Ralf Talibosc in the time of King William. The Hundred (court) testifies this.' A survey of their land follows.

² *Domesday Book and Beyond*, pp. 170–1.

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No apology is needed for these extracts from a passage which gives a new and a living sense to the words of the Hertfordshire Survey. In that survey we have entry after entry of lands held by those who are the 'men' of some one above them, and in at least three instances we can trace the process a step further. At Munden a manor was held by Leofwine, 'a man of earl Harold,' who 'could sell'; while 'Sutrehelle,' which was appurtenant to Munden, was 'held of Leofwine' by Torchil, who 'could not sell without his leave' (fo. 139). In Eastwick 2 hides were held by 'Wulfwine, a thegn of earl Harold,' and in Stanstead adjoining it half a hide by 'Bettice, a man of Wulfwine of Eastwick' (fo. 140b).¹ The third is the very interesting case of Ælfric 'blac.' He had held lands at Datchworth and Watton 'of the abbot of Westminster,' and at Watton, in turn, half a hide was held by Ælfmær, 'a man of this Ælfric' (fo. 133). But the Hundred Court is careful to explain that Ælfric had no power to alienate these lands from the abbey, although 'for other lands he was archbishop Stigand's man.' The entry of these 'other' lands follows, for, clearly, what had happened was that archbishop Lanfranc, when he secured the lands that Ælfric had held of Stigand, annexed also the lands belonging to Westminster Abbey because Ælfric was their tenant. This was the way in which religious houses frequently lost their lands at the time of the Norman Conquest.

The position, as revealed by Domesday, of archbishop Stigand in the county is one that has scarcely received the attention it deserves. The actual manors held by him were scattered—Standon and Broxbourne in its eastern half, Pirton and Redbourne in the west. But what strikes one most in the Hertfordshire Survey, as in that of Cambridgeshire to the north, is the number of holders of land who had been Stigand's 'men.' This may have been due only to his power in the period preceding the Conquest, but it is worth noting that the Ely writers charged him not only with obtaining possession of four manors belonging to the monks of their house,² but with taking other abbeys into his hands, St. Alban's among them. Mr. Freeman observed on this that he could not 'find any mention of an incumbency of Stigand in the local history of St. Alban's.'³ Domesday however tells us (p. 315 below) that Stigand was holding Redbourne of St. Alban's Abbey at the death of Edward the Confessor, but had no power to alienate it from the abbey. It was thus that he had obtained possession of the Ely manor of Snailwell, Cambridgeshire,⁴ while he had also secured from the monks of Bath their great manor of Tidenham, and from those of Winchester that of East Meon,⁵ in both cases to their ultimate loss.

But for Hertfordshire history it is of less interest to trace the cases in which lands were held by 'men' of archbishop Stigand or the earls of the great rival houses of Leofric and of Godwine than to identify the chief local landowners whose 'men' are found in Domesday. Foremost

¹ See also below the case of Edzi, a 'man' of Godid, who was herself a 'man' of Ansgar.

² See *Feudal England*, pp. 460-1.

³ *Norman Conquest*, iii. (2nd ed.), 643.

⁴ Domesday, fo. 199b.

⁵ See the *Victoria History of Hampshire*, i. 416.

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among those resident in the county were Æthelmær 'of Bennington' and Anschil 'of Ware.' Even at the time of Domesday both places had parks, and they must have been respectively the seats of the two thegns I have named. Peter de Valognes obtained Bennington, and with it Æthelmær's scattered estates in Sacombe, Layston, Ashwell, Hinxworth and Radwell. In addition to these he secured, as will be seen under his fief (p. 336), lands held in sundry places by various 'men' of Æthelmær. But it is important to observe that other lands which had been held by 'men' of the same Æthelmær passed to different Norman lords.¹ With Anschil the case was different. Beyond his great manor of Ware he seems to have held no lands himself in Hertfordshire, although, I shall argue, a large landowner in the adjoining county of Bedfordshire; but scattered about Hertfordshire we find his 'men.'² From these two resident thegns we may turn to two magnates whose chief seats were in Essex. Ansgar, Asgar or Esgar the 'staller,'³ whose estates, ranging over many counties, were bestowed on Geoffrey de Mandeville, was indeed succeeded by him in his great manor of Sawbridgeworth and in his estate at Shenley together with land in Hertford itself, but what strikes one most on Geoffrey's Hertfordshire fief (fos. 139-140) is the long list of lands which had been held not by Ansgar, but by his 'men.' Nor do these exhaust the list, for his 'men' are found as the former holders of lands on other fiefs⁴ all over the county. This no doubt is a testimony to Ansgar's great position on the eve of the Norman Conquest, as well as to the fact that his father and grandfather had been men of note before him.⁵ The other of these two magnates was Robert Fitz Wimarc, a foreign favourite of Edward the Confessor, whose chief seat was at Rayleigh in south-east Essex. He held, it would seem, no estate in Hertfordshire himself, but lands were held by 'men' of his in sundry parts of the county.⁶

Now what we learn from this analysis is that, however 'feudal' in appearance is the Anglo-Saxon tenure of land as entered in the Hertfordshire Survey, the rights of a lord in his 'man's' land were far less than after the Conquest, when the feudal system was established. Domesday speaks, it is true, of Ansgar's fief (*feudum*) as passing to Geoffrey de Mandeville,⁷ but the Hertfordshire evidence shows that in this so-called fief there were not of necessity comprised the lands held by his 'men' as would have been the case with a fief under the Norman system. Two instances in point are afforded in this county. 'Godid,' a 'man' of

¹ Domesday, fos. 133*b*, 134*b*, 137*b*, 138, 140, 141*b*, 142. A 'man' of Ælfric (*Alricus*) of Bennington occurs on fo. 137*b*. This Ælfric may have been Æthelmær's predecessor, as there are parallel cases in Domesday.

² *Ibid.* fos. 133*b* (2), 138, 141, 141*b* (2).

³ Dr. Stubbs observes that the 'constable' of the Norman kings 'exercised the office of quarter-master-general of the court and army and succeeded to the duties of the Anglo-Saxon staller' (*Const. Hist.* [1874], i. 354).

⁴ Domesday, fos. 133*b* (4), 134, 134*b*, 137, 137*b* (3), 138*b*, 140, 142 (2).

⁵ See Freeman's *Norman Conquest*.

⁶ *Ibid.* fos. 133*b*, 134, 137*b*, 141*b*. Robert Fitz Wimarc (on whom see Freeman's *Norman Conquest*) was sheriff of Essex, as was Ansgar of Middlesex.

⁷ 'Sed non pertinuit ad feudum Ansgari antecessoris Gosfridi' (ii. 411).

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Ansgar, held a manor at Thorley, 2 hides at Hoddesdon, two-thirds of a hide in Layston, and 2 hides close by at Beauchamps in Widiall. Moreover 'Edzi, a man of Goded,' held half a hide in Thorley, and at Wickham a sokeman with 8 acres was 'a man of Godid.' What became of all this land? Geoffrey de Mandeville obtained the manor at Thorley, one of the hides at Hoddesdon and the land at Wickham; count Eustace of Boulogne secured the estate in Layston and Widiall, with one of the hides at Hoddesdon; and the bishop of London is found in possession of what 'Edzi' had held at Thorley. The other instance is that of Wulfward, who was likewise a 'man' of Ansgar. He had held a manor at Hormead and another at Wormley; the former went to count Eustace, and the latter had passed apparently by sale, 'after the coming of king William,' to Ælfwine Dodesone, an Englishman. Geoffrey de Mandeville had nothing. By way of contrast with Ansgar's 'fief' we will take that of Ælfstan 'of Boscumbe.' In Hertfordshire as in Bedfordshire all the lands held by Ælfstan himself or by his 'men' had passed to William de Ow. It may cause some surprise to learn that Boscombe, the seat of this great thegn, was far away near Amesbury in Wiltshire, but the fact illustrates the scattered character of the greater Anglo-Saxon estates. The point however to be here insisted on is that the lands of Ælfstan's 'men' passed with his own to William, his recognized Norman successor.

We have mention of a few other lords whose 'men' held manors. At Pelham the bishop of London had secured three estates which had been held by 'men' or 'thegns' of Godwine 'de Benefelle,' while two others which his 'men' had held passed to Robert Gernon. No such man as Godwine de Benefelle is to be found in Domesday, but the fact that in one Hertfordshire entry he occurs as 'de Benedfelle' convinces me that he was the nameless freeman (*liber homo*) who had held, on Robert Gernon's fief, Bendfieldbury ('Benedfelda') in Stansted Montfichet, just across the Essex border and close to Pelham. But one does not see what can have led Hertfordshire men to seek him for lord. A greater man was Oswulf, otherwise Oswulf son of Frane, whom the Hertfordshire Domesday expressly styles the predecessor of Robert 'de Toden.' But although Robert succeeded to his manors here, as in Beds, Bucks and Northants, 2 of his 6 'men' with their lands passed to the count of Mortain and 2 to Robert d'Ouilly, while the other 2 were annexed by Engelric, the predecessor of count Eustace. This case is the more remarkable as their lands lay in and about Oswulf's chief manor.¹ Something should also be said of Ælfwine of 'Godtone,' who had held 3

¹ Not many miles from this manor of Miswell was Studham (the 'Estodham' of Domesday) on the borders of Herts and Beds, a considerable manor held by this same Oswulf (*Domesday*, fo. 215). I entertain no doubt that he was the Oswulf who, with Æthelitha his wife gave their land at 'Stodham' to St. Alban's in the time of abbot Leofstan and Edward the Confessor. The gift (which the Normans seem to have ignored) is Kemble's No. 945 (*Codex Diplomaticus*, iv. 280-1) and is witnessed by Wulfwig bishop of Dorchester, Bondig the staller, Burhed (a great landowner) with Eadwine his son and successor (see the *Victoria History of Northamptonshire*), and Leofwine of Caddington (see p. 281 below).

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hides 'under' the abbot of St. Alban's (fo. 135*b*). His own estate appears to have lain in Stanstead (Abbots), where he had 11½ hides (fo. 138*b*), and Hoddesdon (fo. 142*b*), but 'men' of his had small holdings at Sawbridgeworth and Ayot. In his case we can trace his influence at Sawbridgeworth to the estate he held in Stanstead, and his lordship of a 'man' at Ayot to the fact that he held of St. Alban's Abbey at Codicote adjoining. Looking then at the whole of the evidence we are led to infer that the relation of an English lord to his 'men' was distinctly less close than that between a Norman baron and his under-tenants. The former relation was one of considerably varying character and was very largely at least the result of small landowners voluntarily seeking some influential man as their lord. The latter was rigid and well defined, resulting as it did from the action of the lord, who enfeoffed his under-tenant on his own terms.

This brings us to the division among the Norman conquerors of the lands which had been held in Hertfordshire by the English lords and their 'men.' It is a striking fact that Edward the Confessor had held nothing in the county outside Hertford until the forfeiture of earl Tostig towards the close of his reign brought him the manor of Bayford(bury), in which Essendon, which is not mentioned in Domesday, was then, I believe, included.¹ Even the great house of Godwine held but little in Hertfordshire, although its vast territorial possessions constitute 'one of the best marked features of Domesday Book.'² Beyond Hitchin and its appurtenant manors, which the Conqueror reserved for himself, Harold had only held Amwell, which was given to Ralf de Limesi;³ and of his brothers, Leofwine had but a small manor at Puttenham, adjoining Bucks where his estates were large, while Tostig, we have seen, had Bayford. The lands of the Church, although considerable, were by no means of exorbitant extent. St. Alban's naturally led the way with an assessment under the Confessor of nearly 140 hides. This was almost as large as that of all the other religious houses put together. Ely had 49, Westminster 41½, the canons of St. Paul's 38, and Ramsey, Waltham, Chatteris and 'the old minster' of Winchester some 28 between them. The total hidage of the county under Edward the Confessor was, according to Prof. Maitland, 1,050 hides,⁴ and in 1130 it was reckoned as high as 1,100.⁵ The Church's proportion of this total—some 290 hides—was by no means extravagant in those days.

We have still however to consider the lands of the bishop of London in Hertfordshire, which must be reckoned as at least 45 hides. The Domesday entries on these lands require to be carefully studied, for it is only of 7½ hides at Hadham that we read: 'This manor was and is (the

¹ A similar phenomenon is found in the adjoining county of Essex, where Edward the Confessor appears to have held nothing at his death, King William's estates in that county having mainly belonged to Harold. The peculiar character of the great manors held by the latter in Essex convinces me that they had been Crown demesne, which points to the conclusion that Hitchin had previously been so also. This would explain the appearance of the royal *avera* at Hitchin (see p. 273 above),

² *Domesday Book and Beyond*, p. 168.

³ But compare p. 299 below.

⁴ *Domesday Book and Beyond*, p. 464.

⁵ Pipe Roll, 31 Hen. I., p. 62. Mr. Ragg makes it nearly 1100 in 1086

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property) of the see of London.' Bishops could buy, inherit, or receive lands, like other men, in their private as apart from their official capacity. In this county, for instance, the bishop of Chester held a manor at Mimms which he had inherited from his father, while the bishop of Bayeux had built up a fief for himself, not for his Church, from the lands of plundered Englishmen. In the same way William, a former bishop of London (1051-75), had personally acquired lands by purchase. This we learn from the Hertfordshire Survey, where the very first entry on the lands of his official successor tells us that 'this land was purchased by bishop William, according to the bishop's men, but the shire (court) does not confirm their testimony' (fo. 133b). On the next page we read of the manor of (Bishop) Stortford that 'it is (part) of the fief that bishop William purchased,' and at the end of the last entry there is appended the note: 'this land is of the fief of bishop William.' Again, under Geoffrey de Mandeville's manor of Thorley (fo. 140) we are told that 'William bishop of London purchased this manor from king William . . . and now the (present) bishop of London claims it.' If the lands held by the bishop in 1086 are carefully examined it will be found that they were held by laymen in almost every instance under Edward the Confessor. This is in striking contrast with the bishop's lands in Middlesex, which Domesday enters as having been at that time already held by his predecessor. In this connection may be mentioned the fact that the bishop, together with Ingelric, count Eustace's predecessor at Tring, was among the three commissioners who, in Mr. Freeman's opinion, had charge of the 'general redemption of lands by the English.'¹ His inference, however, is rather hazardous.

Having now dealt with the lands that, before the Norman Conquest, were held by the great house of Godwine or were in the hands of the Church, we come to those of the landowners at large, the English lords and their men of whom I have spoken above. Their holdings were so largely broken up for division among the Normans that any definite succession is in this county rare. We find however that the Conqueror's brother, the warrior bishop of Bayeux, had succeeded Harold's brother Leofwine as in the adjoining county of Bucks, and indeed as in Kent and Surrey. But a study of his fief reveals the fact that he had many English predecessors. This variety of tenants was very effectually simplified; Domesday shows eight of his estates in this county as held of him by 'Adam,' and nine others by Osbern. The former was a man of some consequence, for he is found acting in Worcestershire as one of the Domesday commissioners; he was a son of Hubert de Ryes, in the bishop's district of the 'Bessin,' and a brother of 'Eudo dapifer,' who had wide estates in Herts and Beds. It is worth noting that the bishop's tenant in a single hide at Thundridge was that great man Hugh de Grentmesnil, whom we shall find holding as a tenant-in-chief the adjoining manor of Ware. Although some of the land which had been held by the 'men' of earl Leofwine had passed to the bishop of Bayeux,

¹ *Norman Conquest* (1st ed.), iv. 25-6, 725-6.

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other portions—namely, Hemel Hempstead, (King's) Langley and land in Shenley—passed to the Conqueror's other brother, Robert count of Mortain.¹ A second factor in his fief consisted of 7 hides in Pentley, Wigginton, Gubblecote and Dunsley, which (Domesday says) he had filched from Tring (*sumpsit de Tredunge*), to which they had belonged in Ingelric's time. Only $6\frac{5}{8}$ hides out of these are accounted for under his fief, but the missing one-sixth of a hide is found further on (fo. 142) as the solitary Hertfordshire holding of 'Manno the Breton,' lord of Wolverton in Bucks and a great Domesday baron. Let us now turn to the third factor in count Robert's fief, which lay together, roughly speaking, up the valley of the Gade.

Berkhampstead is of interest in many ways: historically for its early mention in English times and as the place where the Norman Conquest 'received,' in Mr. Freeman's words, 'the formal ratification of the conquered';² archæologically for the earthworks of its castle; and feudally as the head of a well-known 'honour' carved from the mighty fief of count Robert of Mortain. In Domesday it is entered in a way that suggests that it was his personal residence; a servant or serjeant of the count is mentioned; a 'fossarius' points to the existence and importance of the castle ditches; and a vineyard is, in my opinion, one of the surest signs that a Norman lord resided on the spot and was striving to grow his own wine. It is also highly suggestive of the count's personal residence that, doubtless around his castle, there is found in 1086 a 'burbium' containing what was then the rather considerable number of 52 burgesses, who were worth to him £4 from the 'toll,' a composition perhaps for market dues.³ In spite however of that prosperity which the residence of the king's brother ought to have brought to Berkhampstead, its annual value is found to have dwindled from £24 to £20 and then to £16. At Pevensey in Sussex (fo. 20b), another of his strongholds, the burgesses had greatly increased since he obtained possession; he had 60 there of his own in 1086, and the 'toll' was worth to him, as at Berkhampstead, £4 a year; but there is no mention under Berkhampstead of that rent (*gablum*) which was usually received from burgesses, and which amounted to nearly £2 from the 60 he held at Pevensey.

In view of the earthworks of the castle and our ignorance as to its origin, one is naturally anxious to learn something of its tenure before the Conquest. But Domesday only tells us of Berkhampstead that it had been held by 'Edmar, a thegn of earl Harold.' Lower down however we read of the count's manor of Gaddesden that 'this manor was held by Edmer (attile)⁴ and was an appendage of (*Bereuwich* in) Berkhampstead.' With this clue we at once identify the Domesday holder of the chief

¹ See pp. 276–78 above for remarks on the separation of the lord's land from that of his men.

² *Norman Conquest* (2nd ed.), iii. 544. The fact comes from the *Anglo-Saxon Chronicle*, where the place is styled 'Beorhamstede.'

³ Mr. Page is of opinion that 52 is perhaps an error of the scribe for 12, as the latter number occurs there subsequently.

⁴ This word is interlined.

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manor. He was the 'Edmer Atule, a thegn of king Edward,' whose great manor of Bledlow, separated from Berkhamstead by the whole width of Buckinghamshire, had similarly passed to count Robert (fo. 146), as had his manor of Stanmore, on the Hertfordshire border, in Middlesex (fo. 129b).¹ Whether he was also identical with a far greater landowner, Edmar 'atre,' a predecessor of the count in Devon and other south-western counties, one cannot safely say, for the Domesday scribes were very loose in the names and styles they gave as those of English predecessors. In Hertfordshire, for instance, Kensworth is entered as having been held of king Edward by 'Lewinus cilt,' but Caddington (the next entry) only as held by 'Lewinus' (fo. 136). But on turning to the Bedfordshire portion of Caddington (fo. 211), we find that it was 'Lewinus cilt' who had held it T.R.E. and who gave it to the canons of St. Paul's.² We similarly read under Hertfordshire, of its detached portion of Meppershall, that its former owner was Leofwine 'a thegn of king Edward' (fo. 211); and it is only when we turn to the Bedfordshire portion that we learn that this was the above Leofwine (*Lewinus*) 'cilt, a thegn of king Edward' (fo. 216b). This Englishman of noble birth—for such I take to be the meaning of 'cilt'—held land in Bedfordshire at two other places (fos. 214b, 215), and is quite possibly identical with that Leofwine the thegn who occurs elsewhere as a former owner in Herts as well as in Bucks.

Next, in Domesday, to the fief of count Robert of Mortain is that of Eustace count of Boulogne, of which the head, in Hertfordshire, was the great manor of Tring (fo. 137). His predecessor there, as often in Essex, where lay the bulk of the count's estates, was Ingelric, a man of some interest, who had enjoyed the favour of William as well as that of Edward, but who was somewhat given to the sin of removing his neighbour's landmark.³ At Tring, for instance, he had added to the manor since the coming of William 2 sokemen of Oswulf who had not belonged to it, and a 'man' of the abbot of Ramsey with no less than 5 hides which he had no power to alienate from that abbey. Ingelric had founded the house of canons at St. Martin-le-Grand, London, and

¹ See also p. 269 above for this Edmer.

² This leads us to an interesting discovery. Kemble printed in his *Codex Diplomaticus* (iv. 259) the will of 'Eadwinus de Cadendune' (No. 920), in which he bequeathed Watford to St. Alban's, and to his son Leofwine seven estates, of which 'Beranlea' was to pass to St. Alban's after Leofwine's death. He further expressed his wish to be buried at St. Albans, to which abbey he bequeathed 20 of his best oxen and 20 of his best cows. Kemble identified 'Cadendune' as Chadlington in Oxfordshire, which is out of the question, as the Domesday form of the place-name was 'Cedelintone.' The real place was Caddington, the 'Cadendone' of Domesday, at which Eadwine was succeeded by his son Leofwine ('Cilt'). Not only was 'Cadendune' one of the estates bequeathed by him to Leofwine, but 'Strætlea' was another; and this place was Streatley, Beds (some five miles north of Caddington), where Domesday duly shows us Leofwine 'Cilt' as a former holder (fo. 214b). We may now advance a step further and turn to Kemble's document No. 945 (iv. 280-1), which records the gift to Leofstan abbot of St. Alban's (and his house) of land at Studham, which stood like Caddington on the border of Herts and Beds, and was only some four miles from it. To this gift, which seems to have been made within a dozen years before the Conquest, the last witness named is 'Leofwinus de Cadendune,' obviously the same Leofwine 'Cilt,' taking his name, like his father before him, from Caddington, which was probably the chief residence of them both.

³ See for him my paper on 'Ingelric the priest' in *The Commune of London and other Studies*, pp. 28-36.

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the fact that Domesday shows them holding a hide in Hoddesdon of the count seems to imply that there also Ingelric had been his predecessor. We can trace more clearly than usual the sources from which had been formed the count's Hertfordshire fief, for at Reed, Anstey, Corney(bury), Barksdon (Green) and Wakeley, all in the north-east of the county, he had obtained the lands of Ælfward, a 'man' of Harold, 10 hides in all, while at Layston, Widdial and Hoddesdon he had secured those of 'Godid,' a 'man' of Ansgar the staller, to the extent of $3\frac{2}{3}$ hides. It should be observed that the lands of this 'Godid' were divided, for Ansgar's recognized successor, Geoffrey de Mandeville, obtained her 4 hides at Thorley (the title to which was disputed)¹ and one of the 2 hides she had held in Hoddesdon (fos. 139^b, 140).²

Passing to the other tenants-in-chief, Robert Gernon was an Essex baron, whose chief seat was at Stanstead on the Hertfordshire border, which became known from Robert's successors as Stanstead Montfichet. Ralf 'de Toden,' whose exact relationship to Robert 'de Toden,' the lord of Belvoir, is uncertain, is of interest in more ways than one. Of exceptionally noble Norman birth, he was hereditary standard bearer of the duchy and lord of Thosny ('Toeni') and Conches. The great estates he held in England were scattered in a strange fashion, the bulk of them lying in Gloucestershire and Herefordshire (where he held Clifford Castle) and in Norfolk. His two Hertfordshire estates, Flamstead and Westmill, were of no great extent, but it was at Flamstead that he seems to have fixed his chief residence; and there his descendants in the male line flourished for more than two centuries after the date of Domesday. Ralf de Limesi, whose fief, similarly, was scattered over several counties, held some 25 hides in Hertfordshire, divided between the south and the extreme north of the county. He is chiefly of interest as a benefactor to St. Alban's Abbey, a cell of which he founded at Hertford. Another considerable tenant-in-chief was William de Ow, who had obtained the lands, as explained above (p. 277), of 'Alestan de Boscumbe.' His Hertfordshire estates were reckoned at some 26 hides. The two preceding fiefs however were far exceeded by that of Geoffrey de Mandeville, the recognized successor of Ansgar the staller, whose estates, which mainly lay along the eastern and southern borders, amounted to about 65 hides.³ Geoffrey de Bech, the successor, as I have shown, of Ilbert, a former sheriff of the county, held over 40 hides. Peter de Valognes, the sheriff in 1086, deserves longer notice than the other Hertfordshire barons, because although his barony extended over six counties in the east of England it appears as a Hertfordshire barony in 1166, when his heir, Robert de Valognes, made return of its knights.⁴ His Domesday holding in this county was rather over 40 hides, some half of which were in or about Bennington and

¹ See p. 277 above.

² Compare p. 276 above for such division.

³ The holding of count Eustace, the greatest lay tenant, only exceeded that of Geoffrey by 1½ hides. Tring alone accounted for considerably more than half of it (i.e. 39 hides).

⁴ *Red Book of the Exchequer*, pp. 360-2.

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Sacombe, while the rest were scattered. Most of his land had belonged to that great local thegn Æthelmær of Bennington and his 'men,'¹ and in Cambridgeshire also the land at Bourn, which was all that he held in that county, had belonged to Æthelmær. His Hertfordshire fief was substantially enlarged later on by Henry I., who gave him the Crown manor of Bayford(bury) with Essendon² together with a house in Hertford and the king's mills there.³ Domesday tells us that, at its date, Peter had already bought in Hertford a house and two churches, one of which was probably All Saints', for his descendant and namesake bestowed it on Waltham Abbey, Essex. He himself was the founder of Binham Priory, Norfolk, which he made a cell to St. Alban's early in the reign of Henry I.⁴ At the time of the Domesday Survey he was sheriff of Essex as well as of Herts, a fact of interest in view of the long continuance of such union.⁵ One considerable tenant remains: this was Hardouin d'Echalers ('de Scalers'), whose name lingered in the manor of Challers (in Reed), and is still preserved in Scales Park on the north-east border of the county. His fief, reckoned at some 40 hides, consisted of scattered estates, which had in the main belonged to sundry small holders, sokemen and others. This was also characteristic of his extensive fief in Cambridgeshire (fos. 197b-9), where was the *caput* of his barony. His descendants were benefactors to the Cluniac Priory of Lewes, Sussex, on which, early in the twelfth century, Hugh 'de Scallariis' bestowed the Hertfordshire churches of Widiall, Reed, and Little Berkhamstead.

Of the other Hertfordshire tenants-in-chief 'Maino the Breton' was a Buckinghamshire baron, whose chief seat was at Wolverton. Walter the Fleming had large estates in Bedfordshire, where Woodhill was the *caput* of his barony, much of which lay in Northamptonshire. Hugh de Beauchamp was the founder of the baronial house of Beauchamp of Bedford, and of his Bedfordshire estates I am about to speak. Hugh de Grentmesnil had obtained land in no less than eight counties, but the centre of his power was in Leicestershire, where he was succeeded by the earls of Leicester in the possession of his great fief. Although, like the three tenants mentioned before him above, his holding occupies but a small space in the Hertfordshire Domesday, it was of exceptional value and importance. Ware, which had been the seat of Anschil, a great local thegn,⁶ was worth in those days no less than £50 a year. When it appears in Domesday as held by Hugh de Grentmesnil it has a 'park for beasts of the chase' and a newly planted vineyard, sure signs that its Norman lord had there a personal residence. Now under Hertfordshire there is nothing to show how Hugh de Grentmesnil became possessed

¹ See p. 276 above.

² See p. 278 above.

³ *Cart. Antiq.* k. 22. Domesday enters the mills there as three, worth £10 a year by tale to the king. They are valued at £11 in the 'roll of Robert Mantel' (*Red Book of the Exchequer*, p. 774).

⁴ *Monasticon Anglicanum*, iii. 341-53. The charters of this priory afford valuable information concerning his wife, children and descendants.

⁵ Compare *Geoffrey de Mandeville*, pp. 39, 142, 150, 166-7. The two counties were under one sheriff till 1567 with trifling exceptions.

⁶ See p. 276 above.

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of Ware, but under Bedfordshire we find, on the fief of Hugh de Beauchamp, several estates, of which we read that 'Ralf Tallgebosc' held them 'in exchange for Ware' (fos. 213, 214). These are assessed in all at $22\frac{3}{4}$ hides as against the 24 hides at which figure Ware stands in Domesday. By this means we discover that Ware had originally been obtained by that Ralf Taillebois of whom we heard above as acting with Peter de Valognes on the king's behalf at Hitchin (p. 273). Moreover we are led to a further discovery. Of Hugh's Bedfordshire manor of Stotfold we read that 'it was farmed for £30 on the day that Ralf Tallebosc died' (fo. 213), implying, as do the above entries, that Hugh had succeeded Ralf; and this succession indeed is actually stated on fo. 211*b*, where Hugh de Beauchamp claims a Bedfordshire manor as having belonged to 'Ralf Tallebosc his predecessor' (*antecessorem ejus*).¹ We then turn to Hertfordshire and find 'the daughter of Ralf "Tailgebos"' holding 'in Hoddesdon 4 hides of the fee of Hugh de Beauchamp' (fo. 142*b*).² But there is yet another factor in the problem. In Bedfordshire Azelina widow (*uxor*) of Ralf 'Tallgebosc' is found holding considerable estates in 1086 (fo. 218), some of them as her marriage portion and some of them in dower. One of the latter was claimed by Hugh de Beauchamp (clearly as her husband's successor) on the ground that it had never formed part of her dower. Now this estate was an appurtenance (*berewiche*) of Stotfold, where Hugh had succeeded Ralf, and had been held by Anschil, who must therefore be identical with 'Aschil, a thegn of king Edward,' the former holder of Stotfold' (fo. 213). This brings me to my conclusion from the whole of the above evidence, which is that 'Aschil,' the Bedfordshire thegn who had held so largely in that county under Edward the Confessor, was no other than 'Anschil' of Ware, whom several Hertfordshire men, as shown above, had sought as lord.⁴ I believe that his estates in both counties were originally granted to Ralf Taillebois, who parted with Ware itself in exchange for lands in Bedfordshire; and that, on Ralf's death, the bulk of them passed to Hugh de Beauchamp (of whom 'Aschil' is consequently styled the predecessor on fo. 212*b*), and the rest to Ralf's widow.⁵ The position of the latter is slightly complicated by her holding certain lands which had belonged to a great Bedfordshire thegn, Wulfmar of Eaton(-Socon), whose successor was Eudo Dapifer; but this will be more fitly discussed under Bedfordshire, for in our county Wulfmar had held nothing but a house in Hertford, which had duly passed to Eudo Dapifer.

¹ Compare also fo. 210 ('Estone').

² See, for this holding, p. 344 below.

³ The identity of the two names is suggested not only by the Bedfordshire entries above and by one, on fo. 212*b*, where Hugh's predecessor appears as 'Anschil,' but also by two Hertfordshire entries close together on fo. 133*b*, where the lord of Ware appears as 'Anschil Waras' and as 'Aschi Wara.' But this identity would seem to imply that 'Aschil, a thegn of king Edward,' whom Eudo Dapifer had succeeded at Knebworth, was also Anschil of Ware.

⁴ See p. 276 above. But the references there do not exhaust the list, for the 4 sokemen who had held 4 hides at Stanstead and were 'men of Anschil' must be added.

⁵ Ralf had, in his lifetime, given some 10 hides at Stanstead to 'Rannulf brother of Ilger' in marriage with his niece.

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Eudo, who is also in the Hertfordshire Domesday styled Eudo son of Hubert (de Ryes), was the founder of St. John's Abbey, Colchester, on which he bestowed lands in Barkway and Barley. His tenant at Knebworth as in Hertford itself was Humfrey d'Anslevillē, who also held of him at Wimpole and Clopton in Cambridgeshire and was a Domesday juror for the Hundred of Arningford in that county. Ralf Bainard, who had a large fief in the three eastern counties, would seem to be the only other Norman baron calling for mention in the county. It is when we turn to the tenants-in-chief of native origin that we meet with two names of exceptional interest. The first of these is Eadgar the Ætheling ('Edgarus Adeling'), the unfortunate representative of the Anglo-Saxon kings, who was elected to the throne on Harold's death, but never crowned. Eadgar's estates at Hormead and Barkway amounted in all to little more than 8 hides and had been formed out of the small holdings of about a dozen Englishmen. It is noteworthy that his manor had been increased more than fourfold by Ilbert the Norman sheriff, who had added to it the lands of men who had held them independently.¹ At both places Eadgar's tenant was a man who bore the name of Godwine. Mr. Freeman ingeniously conjectured that this Hertfordshire tenant is the Godwine who figures in a semi-legendary tale preserved by the Scottish chronicler as fighting on behalf of his lord Eadgar in a trial by combat, and afterwards taking active part in the Ætheling's expedition to Scotland and obtaining a fief there. He also saw in him the father of that 'Robert son of Godwine' who, after great exploits on crusade, was captured by the Saracens at Rama and martyred for the faith.² The other English tenant of interest was Derman, who, although he is only entered among 'the king's thegns,' held very nearly 16 hides, mainly in Walkern and Watton. The whole estate had been held under Edward the Confessor by a certain Ælfwine Horne, who is entered as 'a thegn of king Edward' under Middlesex (fo. 128*b*), in which county he had held land in mortgage at Kingsbury. He had also, as Ælfwine 'horim,' held a Bedfordshire manor at Flitton (fo. 215*b*); but it was only in Hertfordshire that Derman succeeded him. The interest attaching to Derman is due to the fact that he may have been identical with that 'Derman of London' who held of the king half a hide at Islington (fo. 130) and whose descendants have been there traced by means of the cartulary of Clerkenwell.³ And it can scarcely be doubted that the 'Deorman' whom the Conqueror speaks of as his 'man,' in a writ in his favour relating to Essex which is still preserved at the Guildhall, was our Hertfordshire 'king's thegn.'⁴ He is, somewhat oddly, associated by Domesday with a certain 'Alward'

¹ Compare his action at Hitchin (p. 273 above). This action of Ilbert seems to imply that the Crown had held these estates for a while before they were given to Eadgar.

² *Reign of William Rufus*, ii. 115-22, 615-8.

³ See Tomlin's *Perambulation of Islington*, pp. 60-4 (where the identification is doubted); also *The Commune of London*, p. 106.

⁴ See Loftie's *London*, pp. 130-3, for a discussion of this 'Deorman' question.

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in his lordship of Watton, a manor which possesses a special interest, being found under John in the hands of the first mayor of London, who held it by serjeanty.¹

The small native landowners as a body shared the fate of the richer thegns, but here and there, as in other counties, one finds a stray survivor. 'Turchil,' a 'man' of Ansgar the staller, had held a manor in Bengeo, with power to sell it ; but he lost it to Geoffrey de Mandeville, the successor of his lord Ansgar. He was however almost certainly identical with that 'Torchil,' a 'man' of Ansgar the staller, who is entered on the same page as holding under Geoffrey de Mandeville 2 hides at Digswell, which he had held, with power to sell, in the days of Edward the Confessor (fo. 139*b*). Another Englishman, Ælfward 'of Merdelai,' held of king William, as one of his thegns, the small estate in 'Rodenehangre' which he had similarly held of king Edward (fo. 142*b*) ; but the hide he had held at Mardleybury itself, with power to sell, he had now to hold as an under-tenant of Robert Gernon the Norman (fo. 137*b*). A third case is that of a Godwine who had held some land at 'Sela,' with power to sell, in the days of Edward the Confessor, and is found, in 1086, holding it as an under-tenant of Geoffrey de Bech (fo. 140*b*) ; he was very possibly identical with the 'Godwine the thegn' of the next entry who had lost the small estate that he had similarly held at Roxford.

We must now turn to a different subject, the 'hidation' or assessment of the county. This is of less institutional importance in Hertfordshire than in some other districts, but its fundamental principle is well illustrated within the county. This principle is known as that of 'the 5-hide unit,' and was undoubtedly of great antiquity. When the 'hide' meets us in Domesday Book it is a mere fiscal term, and denotes no definite area or value. This is best shown by the fact that we find the vills arbitrarily assessed in terms of the 5-hide unit, that is, as taxed for the Danegeld at 5 or 10 hides or some other multiple of five. Let us take some instances in point. Hertingfordbury, Little Berkhamstead and Wormley were assessed at 5 hides each, Sandon, Aston, Bayford(bury) and Hertford itself at 10 hides each, Rickmansworth at 15, Cheshunt at 20, and Bengeo at 25. This last is so instructive an instance that its state under the Confessor deserves to be set forth in detail, with the preliminary explanation that, for assessment purposes, a hide consisted of 4 virgates and a virgate of 30 acres. By none of these measures was an actual area denoted.

¹ It may further be worth noting, as the fact seems to be unknown, that the cartulary of St. John's, Colchester (fo. 12 [p. 28]), contains an interesting writ of William Rufus directing that Eudo Dapifer should be given seisin 'de manerio Deremanni,' in which Deorman had been succeeded by his brother Leofstan. The manor unfortunately is not named ; but I feel confident that it was Walkern (although no county is named), and that this accounts for Eudo being able to bestow tithes from Walkern on St. John's Abbey, and for the manor being found in the hands of his successors, Hamo de St. Clare and the house of Lanvalei. But this conclusion would suggest that the Hertfordshire Derman was not 'Derman of London.'

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BENGEŌ

| | H. | V. | A. |
|--|----|----|----|
| Snerrī, ¹ a man of Edith the Fair | 0 | 1 | 0 |
| Brand, a housecarl of king Edward | 6 | 0 | 0 |
| Turchil, a man of Ansgar the staller | 3 | 1 | 0 |
| Anand, a housecarl of king Edward | 5 | 1 | 0 |
| Elaf, a thegn of king Edward | 6½ | 0 | 0 |
| Walchra and Lepsi, king's sokemen | 1 | 0 | 0 |
| Ælfstan, king's sokeman | 0 | 1½ | 0 |
| Four king's sokemen | 0 | 5½ | 0 |
| Two king's sokemen | 0 | 3½ | 0 |
| Æthelmær of Bennington, thegn of king Edward | 0 | 0½ | 0 |
| | 25 | 0 | 0 |

It is not merely the exactness of the total, in spite of the fractional character of the holdings, that here strikes the observer. The typical varieties of holding met with in Hertfordshire, and the remarkable subdivision of land, are also strikingly evident. Brand and Elaf, it will be noticed, account between them for just half of the whole vill of Bengeo; the other half is, in varying proportions, distributed between no fewer than thirteen different holders, of whom nine are sokemen of the king, that is apparently freeholders who owned no other lord. Yet, oddly enough, the greatest man who held land in Bengeo, namely the lord of Bennington,² is credited with the smallest holding, representing only about a fiftieth of the share of Brand or Elaf.

Turning to Datchworth as an example of the single 5-hide unit we find its details to be these—

DATCHWORTH

| | H. | V. | A. |
|--|----|----|----|
| Ælfric blac under Westminster Abbey | 1 | 0 | 0 |
| Westminster Abbey | 3 | 1 | 0 |
| Three king's sokemen | 0 | 2½ | 0 |
| Ælfstan, a man of Æthelmær of Bennington | 0 | 0½ | 0 |
| | 5 | 0 | 0 |

Here again we are struck not only by the neat exactness of the total, but by the typical variety of the holdings. Boxbury is another instance of a 5-hide vill.

| | H. | V. | A. |
|-------------------------------------|----|----|----|
| Samar, a man of Alnod | 0½ | 0 | 0 |
| Ælfward, a man of Ælfstan | 2 | 3 | 0 |
| Appurtenant to Bennington | 1 | 3 | 0 |
| | 5 | 0 | 0 |

It must not be inferred that all or even most of the vills work out as neatly as this; but though we may not now be able to reconstruct the original fiscal groups, or can only do so with much difficulty, there can be no question that in Hertfordshire the system of assessment was the same as it can be shown to have been in Bedfordshire, Cambridgeshire and

¹ Mr. W. H. Stevenson informs me that the names Snerrī (or rather Suerri), Brand, Turchil, Anand and E(i)laf are all of Norse derivation and point to the Norse origin of their bearers. The housecarls were often Danes or Norsemen.

² See p. 276 above.

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Bucks.¹ Two or more vills were sometimes combined by this system to make up some multiple of the 5-hide unit, so that it must not be supposed, when a vill is assessed at some uneven figure, that it cannot have been fitted into the scheme I have described above.

The study of assessment has brought to our notice the division of Hertfordshire vills into holdings of various size. As will be gathered from the Domesday map, the county presents within its borders, on the one hand manors conterminous with vills, such as those of the old ecclesiastical bodies; on the other, vills which were subdivided into several manors and small holdings. On the Essex border the Pelhams are an instance of the latter type. In Domesday they are all found as held by the bishop of London, but they are made the subject of seven separate entries. Under Edward the Confessor the lands had been held thus—

THE PELHAMS

| | H. | V. | A. |
|---|----|----|----------------|
| Two brothers, men of Ansgar the staller | 1 | 1 | 0 |
| Alfred, man of Ansgar the staller | 1 | 0 | 0 ² |
| A thegn, man of Anschil of Ware | 2½ | 0 | 0 ² |
| A thegn, man of Godwine of Bendfield } | | | |
| Two brothers { a man of Ansgar the staller { a man of the abbot of Ely } | 1 | 1 | 0 |
| A thegn, man of Anschil of Ware | 2 | 3 | 0 ² |
| A thegn, man of Æthelmær of Bennington } | | | |
| Five king's sokemen | 0 | 2 | 0 |
| Ælfwine, a man of Godwine of Bendfield | 1 | 0 | 0 |
| Wulfwi, a man of Godwine of Bendfield | 2 | 0 | 0 ² |
| | 12 | 1 | 0 |

Here we have some 12 hides divided between sixteen men in holdings varying from 2 hides to about a twentieth of that amount. Four of these holdings are styled manors for no obvious reason; but all the holders alike 'had power to sell.' The importance of such instances as these of vills held in many portions is explained in the section on 'Manor and Vill' of Professor Maitland's *Domesday Book and Beyond* (pp. 129-30). His own examples are mainly taken from the adjoining county of Cambridgeshire, but in Hertfordshire we may find, on the Essex border, at Wickham, close to Bishop Stortford, as striking a case as any.

WICKHAM

| | H. | V. | A. |
|---|----|----|----|
| Four sokemen | 2 | 0 | 20 |
| Three sokemen { a man of bishop William { a man of Ansgar the staller { a man of Edith the Fair } | 0 | 1½ | 0 |
| One sokeman | 0 | 0 | 8 |
| Two sokemen, men of Ansgar the staller | 1 | 0 | 3 |
| Three sokemen | 0 | 3 | 5 |
| | 4 | 1 | 21 |

¹ For Bedfordshire the tables of hidation constructed by Mr. Airey are decisive, and for Cambridgeshire my *Feudal England* deals in great detail with the subject. In the same work (p. 66) I touch upon the 5-hide unit in Bucks. Mr. Ragg has worked out several examples in Herts.

² These holdings are styled 'M(aneria).'

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In this case a vill of less than $4\frac{1}{2}$ hides is divided between no fewer than 13 sokemen, whose average holding was thus no more than a third of a hide apiece. It is of such communities as this that Professor Maitland writes—

Any theory of English history must face the free, the lordless village, and must account for it as one of the normal phenomena which existed in the year of grace 1066 . . . just as normal as the village which was completely subject to seignorial power. We have before us villages which, taken as wholes, have no lords.¹

We must remember however that Wickham, like the Pelhams, lay on the border of those eastern counties which, to quote his words, were ‘the home of liberty.’ Nor was Widiell, which he takes as an instance of a manor of $5\frac{1}{2}$ hides formerly held by 9 sokemen, far distant from the Essex border. In this last instance there is a marked inequality of holdings which leads the professor to observe that ‘such lordships as exist in it are plainly not the relics of a dominion which has been split up among divers persons by the action of gifts and inheritances.’ On the other hand we can, I think, detect in Hertfordshire at least one case in which the equality of the portions proves, and another in which it suggests subdivision between brothers. The former is found at Barley, and the latter at Wakeley, where what is now Wakeley farm was divided, after as before the Conquest, between three distinct holders.

WAKELEY

| | H. | V. | A. |
|---|----|----|----|
| Edith the Fair (as a ‘manor’) | 0 | 0 | 40 |
| Ælfward, a man of earl Harold | 0 | 0 | 40 |
| Eadric, a man of earl Ælfgar | 0 | 0 | 40 |
| | 1 | 0 | 0 |

This is a most remarkable case of subdivision, the first fraction only being styled a manor, and the holders of the other two being commended to the heads of the greatest rival houses in England.

The division of vills among several holders is characteristic of the east of England in Professor Maitland’s opinion, and, as I have already explained, is probably due in Hertfordshire to its adjoining Essex on the east. Our county, in fact, impinged on what the professor terms ‘the rich and thickly populated shires.’² But the evidence of Domesday Book on population and kindred matters is notoriously very vague. A male population of some 5,000 is actually enumerated in the county, but of this figure we can only say that it shows a ratio to area not far removed from that of the adjoining counties (except Essex). The area under cultivation, though relatively greater than in Middlesex, was proportionately far less than in Bedfordshire and substantially less than in Northants.³ The former must always have been a rich agricultural county, but the latter, at the time of Domesday, was largely covered by forest, which illustrates the unexpected and hazardous character of the results obtained from Domesday figures.

¹ *Domesday Book and Beyond*, p. 141.

² *Ibid.* pp. 20–3.

³ See tables, *ibid.* pp. 402–3.

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The one definite statistical fact that emerges for Hertfordshire in Domesday is that its assessment was low, being in proportion to its area little more than half of that which is found in Bedfordshire and Bucks, although the discrepancy is less marked when we compare the total assessment with the total of recorded ploughlands. As has already been explained above, the assessment in detail was purely arbitrary, that is to say it bore no definite relation to area, ploughlands or value. The two manors, for instance, which composed King's Walden contained 10 ploughlands each, and yet they were only assessed at 1 hide each. Hitchin itself is credited with 38 ploughlands, though its assessment is but 5 hides; and it would even seem that, when we deduct what was afterwards the rectory manor, the remainder, with its 34 ploughlands, stood at only 3 hides.¹ These are very extreme cases, but any one who reads the pages relating to Hertfordshire in Domesday must be struck by the great variety of the ratio that the 'hides' bore to the ploughlands. At Hatfield we meet with the exceptional case of a manor with only 30 ploughlands being assessed at 40 hides, while the other two manors that were held by the abbot of Ely escaped with assessments respectively of 5 and 4 hides, although they contained between them 24 ploughlands. One may add, while on this subject, that in Hertfordshire Domesday records a few reductions of assessment, but they are not of sufficient consequence to require special treatment. Prominent instances occur in the extreme west of the county, where Robert de Toden's manor of Miswell had its assessment of 14 hides reduced to $3\frac{3}{8}$ hides, 'although,' Domesday adds, 'there are always 14 hides there' (fo. 138), while Edward of Salisbury secured a reduction from 6 hides to 3 on his manor of Great Gaddesden (fo. 139). Ralf de Toden's demesne manor of Flamstead, which had been assessed at 4 hides, was let off at 2 hides. There would seem to be nothing but special favour to account for these cases.

There is one occurrence in Hertfordshire of the interesting word *wara*. We read of 'Westone' that 'it lay and lies in Hiz [Hitchin], but the *wara* of this manor lay in Bedefordscire in the time of king Edward, and the manor is there and always was' (fo. 132b). The place is Westoning in Bedfordshire, nearly ten miles distant, as the crow flies, from Hitchin. This is an excellent instance of the Domesday use of 'jacet' as implying not that the manor 'lay' geographically in Hitchin, but that, for tenurial purposes, it was an appurtenance thereof. For fiscal purposes the manor remained in its own Bedfordshire Hundred; its *wara*, or assessment, lay there, and it consequently paid its 'geld' as a portion of that Hundred. *Wara* is also sometimes used of the tax levied on the assessment. Thus we read of a Bedfordshire estate (fo. 211b) that 'it always lay in Kimbolton (Hunts) but rightly paid its *warra* in Bedfordshire.'²

Here perhaps should be mentioned a phrase almost as rare. We

¹ See p. 272 above.

² For *wara* see further my *Feudal England*, pp. 115-7, where examples are given of its use in Cambridgeshire.

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read of Abbot's Langley : ' of this manor Herbert son of Ivo took and occupied 1 hide between wood and plain (*planum*) in the time of the bishop of Bayeux' (fo. 135b). On a Bedfordshire manor the same phrase occurs in connection with a similar aggression : ' William de Caron claims 60 acres between wood and plain . . . of which Ralf Taillebosc¹ disseised his father' (fo. 210). In Worcestershire also we find this phrase, ' inter boscum et planum.' Domesday uses ' inter' in the sense of ' reckoning together,' and the odd combination of the two words represents, I think, the English formula ' by wode and by felde.' Herbert himself occurs in Bedfordshire, where he was the bishop of Bayeux's chief under-tenant.

The subject of aggression leads me to speak of the losses suffered by religious houses through the Normans seizing lands forfeited by Englishmen who held them only as tenants of those houses with no power to alienate them. Of this we have examples at Watton. As observed above (p. 285), Ælfwine Horne had held there a 5-hide estate as ' a thegn of king Edward.' The other 5 hides at Watton were thus held before the Conquest—

| | H. |
|---|----|
| Abbot of Westminster. | 1 |
| Ælfric blac ' of' the same abbot | 2 |
| Ælfrnær, a man of the said Ælfric | 0½ |
| Godwine ' of' Westminster Abbey | 1½ |
| | — |
| | 5 |

Ælfric ' had no power to alienate (the land) from the abbey,' and Godwine similarly ' had no power to sell' it ; indeed after Godwine's death it ought to have reverted to the abbey. Nevertheless archbishop Lanfranc secured Ælfric's share because ' for other lands,' as Domesday puts it, he was ' a man of archbishop Stigand, Lanfranc's predecessor' ; and count Alan is found in possession of Godwine's share because Godwine's wife (or widow) was induced to commend herself to ' Eadgyth the Fair,' to whose lands, and to those of her ' men,' count Alan succeeded (fos. 136b-7). Further, under this last holding we read that ' after the coming of king William' there had been filched from it 16 acres ' which Anschitil de Ros now (1086) holds under the archbishop.' The special value of this statement is that it enables us to identify the ' Anschitil' who was the archbishop of Canterbury's tenant at Watton, Datchworth and two other places as that Anschitil de Ros who held largely in Kent of the bishop of Bayeux, having followed him to England from what is now ' Rots,' between Bayeux and Caen.

It is probable that, as we know from Domesday was the case in other counties, these lands of which the tenant had no power to alienate them from the church were held under a lease for lives. Thus at Gaddesden (fo. 139) a large manor was held of the abbot of St. Alban's by a tenant who ' had no power to alienate it from (*mittere extra*) the

¹ See p. 284 above.

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Church,' and it should have returned to the Church after his death. It was seized nevertheless by Edward of Salisbury. At Therfield Ælfric the priest had held land 'under the abbot of Ramsey without power to sell except by permission of the abbot' (fo. 141*b*). This may not have been a case of holding under a lease, but it is clearly implied that the land should not have passed, as it did, into the hands of Hardwin d'Eschalers.

The wealth of the county at the time of Domesday was almost wholly derived from its rural manors. First in importance, as contributing to that wealth, was the plough with its team of 8 oxen; then came the water-meadows that provided hay for the oxen, the 'pasture' that afforded feed for the live stock of lord and peasant, the woodland in which were fattened vast herds of swine, the fisheries, as they were termed, which paid a rent in eels, and the water-mills to which the peasants took their corn to be ground. Hertfordshire was notably free from what Domesday terms 'waste,' that is from traces of ravage in which manors had been spoiled of their stock and land thrown out of cultivation. On the other hand, we may note a general decrease in the values assigned to the manors in 1086 as compared with that which is assigned to them under Edward the Confessor. Those, for instance, of the archbishop of Canterbury and the bishop of Winchester, the first two tenants-in-chief (fo. 133), work out in aggregate as follows—

| T.R.E. | 'When received' | In 1086 |
|-------------------------------|-------------------------------|-------------------------------|
| £17 3 <i>s</i> . 3 <i>d</i> . | £7 13 <i>s</i> . 3 <i>d</i> . | £10 3 <i>s</i> . 3 <i>d</i> . |

Here we have a sharp drop due to the struggles of the Conquest and a partial recovery at the time of the Survey. This is much as might be expected, and is very frequent in Domesday; but what is remarkable in Hertfordshire is that, in the place of recovery, we have sometimes a further diminution in value. Here are some typical manors, each from a different fief—

| Manors | T.R.E. | 'When received' | In 1086 |
|------------------------------|--------|-----------------|---------|
| Great Berkhamstead | £24 | £20 | £16 |
| Braughing | 20 | 16 | 16 |
| Letchworth | 8 | 7 | 6 |
| Flamstead | 12 | 9 | 11 |
| Amwell | 18 | 12 | 14 10 |
| Westone | 30 | 25 | 20 |
| Knebworth | 12 | 5 | 10 |
| Gaddesden | 25 | 20 | 22 |
| Bennington | 14 | 6 | 12 |
| Walkern | 16 | 8 | 10 |
| Broxbourne | 7 | 3 | 4 |

These instances illustrate sufficiently the damage which the troubles of the Conquest inflicted on the shire's prosperity, the slowness with which

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it recovered from these troubles, and the occasional further fall in value under Norman domination.

The statistics of ploughs and ploughlands are, in Hertfordshire, extremely precise, and enable us to learn on every manor the deficiency, if any, in plough oxen both on the lord's demesne and on the land in the peasants' hands. It must not be supposed that these animals, the driving power, as it were, of the agricultural machine, were the only stock comprised in the returns, but the abstracts of these returns in Domesday Book omitted, in Hertfordshire, the rest.¹ We obtain however, in a single instance, an accidental glimpse of the numerous other requisites for stocking an estate. When Humfrey (d'Ansleville) took over from his lord Eudo Dapifer an estate in Hertford Hundred containing 2 ploughlands he received therewith 68 beasts, 350 sheep, 150 swine, 50 goats, a mare (doubtless for breeding), and a pound's worth of cloths and vessels (fo. 139). But these figures probably are quite abnormal. We obtain some valuable particulars on the stocking of Hertfordshire manors from the curious twelfth-century leases of those belonging to the canons of St. Paul's, Kensworth, Caddington, Ardeley and Sandon.² Oxen, cows, horses, sheep and swine formed the live stock in fixed quantities, the prices ranging, some sixty years after the Domesday Survey, from 3s. to 5s. for horses and oxen, 4d. to 5d. for sheep, and 8d. to 10d. for swine.

The great importance of the plough oxen and the value of hay for their keep are reflected in the entry of water-meadows in terms of the oxen and their feed. We can trace clearly in Domesday Book the richness of the meadows in the river valleys and their painful scarcity in the uplands. Digswell, of which the arable land required 3 plough teams, that is 24 oxen, had only meadow enough for 2 out of this number; Abbot's Langley, with the same requirements, had only meadow for 1 ox; while a nice calculation showed that Datchworth, with its 16 plough oxen, had only 'meadow for half an ox'! Several estates indeed appear to have had none at all. On the other hand, down in the Lea valley, from the junction of the Ash southwards, Stanstead Abbots had sufficient meadow for its 16 plough teams, and Amwell, on the opposite bank, presents the same figures and seems even to have had some hay to sell in addition. Hoddesdon, Broxbourne, Wormley and Cheshunt all had sufficient meadow, and Broxbourne, like Amwell, had more than sufficient, the hay in excess being worth 4s. a year. Cheshunt could provide hay not only for its 23 plough teams but for 'the horses on the demesne,' of whose existence, by the way, we should not otherwise have heard. Even up the little valley of the Rib not only Thundridge but Standon had sufficient meadow for the oxen, but higher up, where the valley divides, Braughing had only hay for 3 of its 11 teams and Westmill only enough for 6 out of its 24. It will thus be seen that the study of the meadows as entered

¹ See p. 264 above.

² See *The Domesday of St. Paul's* (Camden Society), pp. 124, 128, 134-5.

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in Domesday has a bearing on the character of the river valleys and on the position and extent of the manors at the time when the Survey was made.

The streams which made the meadows fat performed the same function for the eels which appear to have been deemed an important addition to the restricted diet of the time. The fisheries or weirs (*gurgites*) entered in Domesday normally paid a rent in eels. One of the manors at Hoddesdon received '100 eels from the weir'; another '150 eels from the fishery.' At Hailey there were similarly received '50 eels from the weir,' and at Cheshunt '100 eels from the weir.' It would seem therefore that eels were more highly esteemed than fish. The monks of St. Alban's however, to whom fast days were a matter of importance, had a fish-stew (*vivarium piscium*) as a needful supplement to their 'park for beasts of the chase.' There was one more function that the streams had to perform: they turned the wheels of those mills of which the annual value is so carefully recorded in Domesday. This value depended rather on the amount of wheat that they were entitled to grind than on the actual power of the mill. At Hertford itself the 3 mills were an important factor in the king's revenue, to which they contributed no less than £10 a year. At Ware, to the eastward down the river, there were no fewer than 5 mills, of which 2 produced between them yearly 24s. and 375 eels, while the other 3 were only worth 10s. together. The part payment of the rent in eels was a common feature in some counties and the above number is accounted for by the fact that eels were always reckoned by 'stiches,' 25 going to the 'stich.' Even now eel-traps are found commonly enough in connection with the mill-leat.

The woodland in those days was of great importance, but its paramount value consisted in the mast on which the swine were fattened. In some counties the woodland was measured by the number of swine that it yielded to the lord in return for the 'pannage,' but in Hertfordshire its extent was reckoned by the number for which it could afford feed. Although this was somewhat of a rough estimate it obviously affords some indication of the distribution of woodland at the time. Knebworth, it was reckoned, had enough for feeding 1,000 swine, as had also Bushey; Hatfield enough for 2,000. On the other hand Lilley, though a manor containing 9 ploughlands, had only woodland enough for 6 swine; and Wymondley, with 24 ploughlands, had only enough for 10. The parks of Cashiobury and Rickmansworth appear to represent the woodlands in which the abbots of St. Alban's were able to feed 1,000 and 1,200 swine respectively. When for a great part of the year fresh meat was not to be obtained, an important part in the supply of food was played by the great herds of swine that then roamed through the forest glades, and the accounts for provisioning castles in the pipe-rolls of the next century reveal the position in the diet of the nation occupied by 'pork and beans.' The woodland was of value also as supplying the timber for building and repairs and underwood for fences and for firing. In Hertfordshire however the fences alone are mentioned in this

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connection, except at Graveley and St. Paul's Walden, where we read that there is wood enough for 'the fences and the buildings.' Another Graveley entry (fo. 140b) contains a word of great rarity in the phrase 'rispalia ad sepes.'

Out in the open fields of the vills, such as those of Hitchin pictured and described in Mr. Seebohm's famous work,¹ there lay that mosaic of strips, usually half acres, on which in strict rotation the crops of the time were grown. The St. Paul's leases, spoken of above, show us wheat, oats and barley, to say nothing of peas and beans, stowed in the barns on the canons' estates. And the chapter's accounts enable us to check the deliveries of grain from its Hertfordshire manors in what is now 'Paul's bakehouse yard' for conversion into bread for the canons—and not into bread alone; for much of it found its way to the great brewhouse of St. Paul's, and barley, wheat and oats alike vanished down their throats in the form of beer.²

Urban life, at the time of the Survey, was limited and of small account. Hertford had acquired a certain importance from the forts erected there against the Danes about the beginning of the tenth century and it was essentially a king's borough under Edward the Confessor. Concerned as it was almost exclusively with fiscal and jurisdictional rights, the Domesday Survey has not much to tell us about Hertford, which it begins by calling a 'borough' and ends by calling a 'suburb' (*suburbium*). Indeed the most notable feature in the short entry on the town is not what it contains, but what it does not contain. The 'heterogeneity of tenure,' as Professor Maitland terms it, which he connects with 'the garrison theory' of the borough,³ is significantly absent at Hertford. And yet, in the words of Green, 'Hertfordshire, Buckinghamshire and Bedfordshire are instances of purely military creation, districts assigned to the fortresses which Edward raised at these points.'⁴ We should consequently expect to find the traces of those 'borough haws' of the rural thegns, which are held, according to 'the garrison theory,' to represent the military service they were bound to render in defending the borough; but comparison with Oxford and other instances selected by Professor Maitland will show that they are here wanting. The chief interest of the Hertford entry is, in fact, fiscal. Under Edward the Confessor it used to escape with an annual payment to the Crown of £7 10s. When Peter (de Valognes) the sheriff took it over to 'farm' it for the Crown, this amount was doubled, though still payable as before 'by tale.' But at the time of the Survey the Crown drew from it £20 a year, which had moreover to be paid in 'assayed and weighed' money, implying a substantially greater amount of pure silver than did £20 'by tale.' An increase in the sums wrung from the boroughs was a marked result of the Norman Conquest.

Next in importance to Hertford was St. Alban's, where there were

¹ *The English Village Community*, pp. 1-6 and frontispiece.

² See Archdeacon Hale's *Domesday of St. Paul's*, pp. xlviil-li. 160-75. Each of the 30 canons received the generous allowance of 30 bowls (*bolle*) of beer a week.

³ *Domesday Book and Beyond*, pp. 176-92.

⁴ *Conquest of England*, p. 237.

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46 'burgesses' worth to the abbey no less than £11 14s. a year 'from tolls and other issues of the vill.' But if burgesses had already clustered around the abbey's walls, the great fortress of Berkhamstead, as a seat of the count of Mortain, had proved no less attractive; its 'burbium' already contained 52 burgesses.¹ Trade, in the form of local markets, was already faintly beginning in somewhat unexpected places; from 10 traders (*mercatores*) at Cheshunt the count of Mortain was receiving 10s. a year; at Ashwell, on the Cambridgeshire border, there were 14 burgesses, and nearly 50s. a year accrued to the abbot of Westminster 'from the toll and other customary dues of the borough' (*sic*); even at Stanstead Abbots we read of '7 burgesses,' but as the 24s. received from them included the profits of the meadow and the woodland, they cannot have been of much account. Possibly the junction of the Stort and the Lea had given rise to an infant trade.

A few miscellaneous matters remain to be noted. One of the most tragic events referred to in the pages of Domesday is the forfeiture of earl Ralf of Norfolk as the result of his abortive rising in 1075. There are allusions to this sensational episode under Munden and Wallington (fos. 137, 140), but we cannot tell what connection earl Ralf had with Hertfordshire. A forfeiture of another kind receives illustration in the county. There is a curious statement in Heming's *Cartulary*, which relates to the monastery of Worcester, that under Cnut an order was made that any one four days in arrear with his payment of 'geld' (land tax) forfeited *ipso facto* his land, which then passed to the first person who came forward and paid the tax (i. 278). Now, under the fief of Peter de Valognes, we read that he took the lands of a certain sokeman into the king's hands 'pro forisfactura de gildo regis se non reddidisse' (fo. 141), though the men of the shire bore witness that it had always been exempt from 'geld.' This is a typical instance of oppression by a Norman sheriff.² Again the Domesday use of 'manor' receives illustration from the land of Deorman (fo. 142). Professor Maitland holds that in Domesday 'manor' is 'a technical term,' that it meets us 'as an accurate term charged with legal meaning.'³ And this meaning he sets himself to discover. As he observes, 'the symbol M which represents a manor is often carried out into the margin'; and this is the case with Walkern, a 10-hide manor. Moreover Watton, which immediately precedes it, is styled by Domesday a *terra* only, not a *manerium*. And yet we have but to look lower down in the column to read of an outlying estate: 'Hæc terra est apreciata in Watone M[anerio] derman.' We thus learn that *manerium* was not a technical term, but was used alternatively with *terra* by the Domesday scribes.⁴

Although the identification of the place-names entered in the record is best dealt with, as a rule, at the place where the name occurs, it seems

¹ See also p. 280 above.

² Ralf 'Taillgebosc,' of whom we heard above (p. 284) is found similarly obtaining land at Sharnbrook, Beds, by paying the charge on it himself when the tenant failed to do so (fo. 216b).

³ *Domesday Book and Beyond*, pp. 107-8.

⁴ See further on this point my paper in the *English Historical Review*, xv. 293-302.

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preferable to treat as a whole a particularly difficult group of manors in the north-west of the county. The place-names in question are Welle, Welei, Wilei, Wilie, Welge, Wilge, and Wlwenewiche. Of these 'Welle,' which Ilbert added as sheriff to Lilley, is clearly Well(bury) in Hitchin to the east of Lilley Hoo. 'Welge' or 'Wilge' softened into 'Welewe' and then developed into 'Welwyn.' As to 'Wilie,' which was also situate in Broadwater Hundred, it finally developed into 'Willian.' The name of 'Wlwenewiche' deserves special attention because it seems to be one of those that have now disappeared. In a return of 1303 we read, under 'Burleye': 'Laurencius de Brok tenet in Burnleye et in *Wollenwich* quartam partem unius feodi militis de heredibus Philippi Burnel.'¹ The name italicized was clearly the 'Wlwenewiche' of Domesday, where Robert Gernon was a holder, for Philip Burnel was the heir of that great bishop Burnel who bought land so largely of the Gernon co-heirs. Moreover, as this return distinguishes 'Wollenwich' from 'Welewe' (Welwyn) and 'Wilien' (Willian) in the same Hundred, it is clear that the 'Wlwenewic' of two charters in the British Museum is not, as imagined in its Manuscript department, merely a form of Willian.² Lastly I find in a charter of confirmation granted by Henry II. to St. Albans mention of land at 'Wulfinewich' which is clearly the same place.³ The name, therefore, can be traced from Domesday, through the twelfth and thirteenth centuries down to 1303. After this it disappears, for Brok's quarter fee is entered only as 'in Borley' in a return of 1346.⁴ It seems to me possible that this quarter fee may have included the manor of Broks in Stevenage, which took its name from the above Laurence and his heirs.

But even the four places that we have now distinguished may not exhaust the equivalents of the Domesday place-names in question. When Bernard de Baliol—who was holding much of the Crown estate in Hitchin and its neighbourhood—granted to the Templars *temp.* Stephen the lands at Dinsley which thus came to be known as Temple Dinsley, he described them as being at 'Wedele.'⁵ This name is very suggestive of that 'Welei' which Domesday surveys next to Hitchin itself (fo. 132b).

Another name presenting difficulty is that of 'Scelve,' 'Scelva,' or 'Escelveia,' as it appears in the three entries relating to it. This place is

¹ *Feudal Aids* (1901) II, 430. We have not the advantage of the editor's opinion on the locality for the name is not identified or even indexed.

² *Index to the Charters and Rolls in the Department of Manuscripts* (1900) I, 816. I have examined both these charters (Harl. 45, B. 1 and Add. 15467), which are assigned to the reign of Henry III., and find that one of them speaks of the garden of Richard de Argentein, which implies that 'Wlwenewic' was in immediate proximity to Wymondley.

³ *Monasticon*, II. 229. Mr. Page finds the place as 'Wlwenewike' in fines of 10 Ric. 1 and 4 John.

⁴ *Feudal Aids*, II. 436. I am by no means satisfied that the editor is right in identifying this 'Borley,' in Broadwater Hundred with 'Barley' in Edwinstree Hundred, which was far away in the north-east of the county. The latter place is 'Berlai' in Domesday and occurs in medieval documents as 'Berlai,' 'Berleia,' 'Berlee,' etc. The 'Borley' or 'Burleye' in Broadwater Hundred was, I believe, Burleigh by Knebworth.

⁵ *Cott. MS. Nero E. vi. fo. (new) 125, (old) 118.*

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alleged to be Chisfield (in Graveley) which is undoubtedly an ancient manor, and the manorial history of which would harmonize with this identity. But in Domesday the name 'Chisfield' would be represented by 'Cisfelle,' which differs very widely from the three forms above.¹ They would be represented now by some such name as 'Shelve,' and in Worcestershire the 'Scelves' of Domesday has finally become 'Shell.' It would seem therefore that the nearest equivalent is the manor of Chells (with Boxbury) in Stevenage where 'Sheaf Green' appears also to represent the name.

In Hertfordshire the Domesday Hundreds are nine in number, 'Albanestou,' 'Brachinges,' 'Bradewatre,' 'Danais' (or 'Deneis'), 'Edwinestreu,' 'Herford,' 'Hiz,' 'Odesei,' and 'Treung.' But of these 'Hiz' (Hitchin) is styled a 'half' Hundred; and Broadwater, we learn further from the *Inquisitio Eliensis*,² was a 'double' Hundred, a statement confirmed by its Domesday jurors being sixteen in number instead of eight. Of these Hundreds 'Albanestou' is now represented by Cashio, 'Brachinges' by Braughing, 'Bradewatre' by Broadwater, 'Danais' by Dacorum (which early absorbed the Hundred of 'Treung' or Tring), and 'Hiz' by Hitchin. Edwinstree, Hertford and Odsey are easily recognisable. It is of interest to note that of the Domesday Hundreds, Hertford, Hitchin, Tring, and Braughing took their names from well-known places; the Broadwater and Odsey, which gave to two others their names, have also been identified, and Mr. Page has discovered on an assize roll of 1278 mention of an 'Edwynestree' as the actual spot on which the Hundred court was held. 'Albanestou' was, of course, the district subject to St. Alban's abbey; 'Daneis' remains unexplained. The 'roll of Mathew Mantel,' an early document, contains valuable information on the profits obtained by the sheriff from the Hertfordshire Hundreds. On it they are entered as 'Daneis,' 'Bradewatre,' 'Hiche,' 'Edwinestre,' 'Odeseye,' and 'Hertford and Brakinghe' (farmed jointly); Tring has disappeared and Cashio is omitted as exempt.³

As it is to William the Conqueror himself that we owe the priceless record of Domesday, that great survey which his English subjects resented bitterly at the time, one may close with two glimpses which its Hertfordshire portion affords of the better side of his nature. Three priests were allowed to remain undisturbed on the small estates they had held under Edward the Confessor (fo. 142), and 'a most remarkable story,' as Mr. Freeman termed it, shows us the grim Conqueror restoring to an English thegn his substantial manor at Tewin 'for the soul of Richard his son' (fo. 141b). This was the King's 'second son Richard, a lad of great promise, not yet girded with the belt of knighthood, who was cut off in the New Forest by a sudden and mysterious stroke while the wearied stag was fleeing for its life before him.'⁴ Less merciful than his

¹ There is reason, moreover, to believe that 'Chisfield' was originally a longer name. In *Feudal Aids* its earliest form is given as 'Chenesfeld' or 'Chinesfeld,' while the above Index to British Museum Charters gives their earliest forms as 'Cheuesfeld' or 'Chiuesfeld.'

² See p. 264 above.

³ See *Red Book of the Exchequer*, p. 775.

⁴ *History of the Norman Conquest* (1871), iv. 613.

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master, Peter the Norman sheriff evicted the English thegn and his mother, and maintained before the Domesday commissioners, in defiance of William's writ, that he held the manor by gift of the king.

Viewed as a piece of clerical work the Hertfordshire portion of Domesday Book is a favourable specimen of the whole. But there are a few strange slips. In a Shenley entry the scribe appears to have written *sol'* for *porc'*, in a Rushden one *sol'* for *lib'*, and in one relating to Boreson *socb* for *sol'*; he has also written *dim' bid'* for *dim' car'* in an Aldbury entry, and substituted 'xxxiii' for 'xxiii' at Cheshunt, and 'iiii' for 'xiii' at Stanstead. And there is one instructive error. The land of the abbot of Ramsey is duly entered in the text, but in the list of holders' names, preceding 'the king's land,' it is erroneously omitted. From this we learn that the text was not compiled in accordance with the list, but *vice versa*. Moreover, in the text the abbot's land is duly numbered as 'xi,' but in the list its omission transfers 'xi' to the entry which follows. There is thus caused a discrepancy between the list and the text, which continues down to what the text calls 'the land of the king's thegns' and numbers as 'xlii,' while the list enters 'Derman and other Englishmen of the king' as 'xli.' Then, in order that the two may close with the same number, the text repeats 'xlii' for the land of Rothais and thus produces a seeming concordance with the closing numbers in the list. From all this it would seem to follow that, when the text was written, a space was left for the list of holders, which was compiled subsequently from the text. The numbering of the fiefs then revealed a discrepancy caused by the omission of the abbot of Ramsey in the list, and the numeral 'xlii' was consequently repeated in the text to bring the total of the entries in the text and the list into superficial harmony.

Perhaps the most perplexing statement on Hertfordshire in Domesday Book is one that is not found under Hertfordshire itself. In the volume dealing with the Eastern Counties the survey of the great manor of Hatfield (Broadoak), Essex—which had been held by Harold under the Confessor—states that 'there belonged to this manor T.R.E., 3 berewites, Herefort [Hertford], Emwella [Amwell], and Hodesduna [Hoddesdon], lying in Herefortsira [Hertfordshire], which are now held by Ralf de Limeseia' (ii. 26), and we further read that 'the 3 berewites were then worth 12 pounds.' Of these three Amwell alone is entered in Domesday as held by Ralf and as formerly held by Harold, to whom, we learn, it was worth 18 pounds. Independent entries in Domesday vary, at times, considerably, but for so remarkable a discrepancy as is revealed by the above entries it is difficult to suggest an explanation. The statement, however, that Ralf held 'Hertford' is noteworthy in view of the fact that he gave to St. Albans a church he had built there, with a hide of land appendant, which became the nucleus of Hertford Priory.

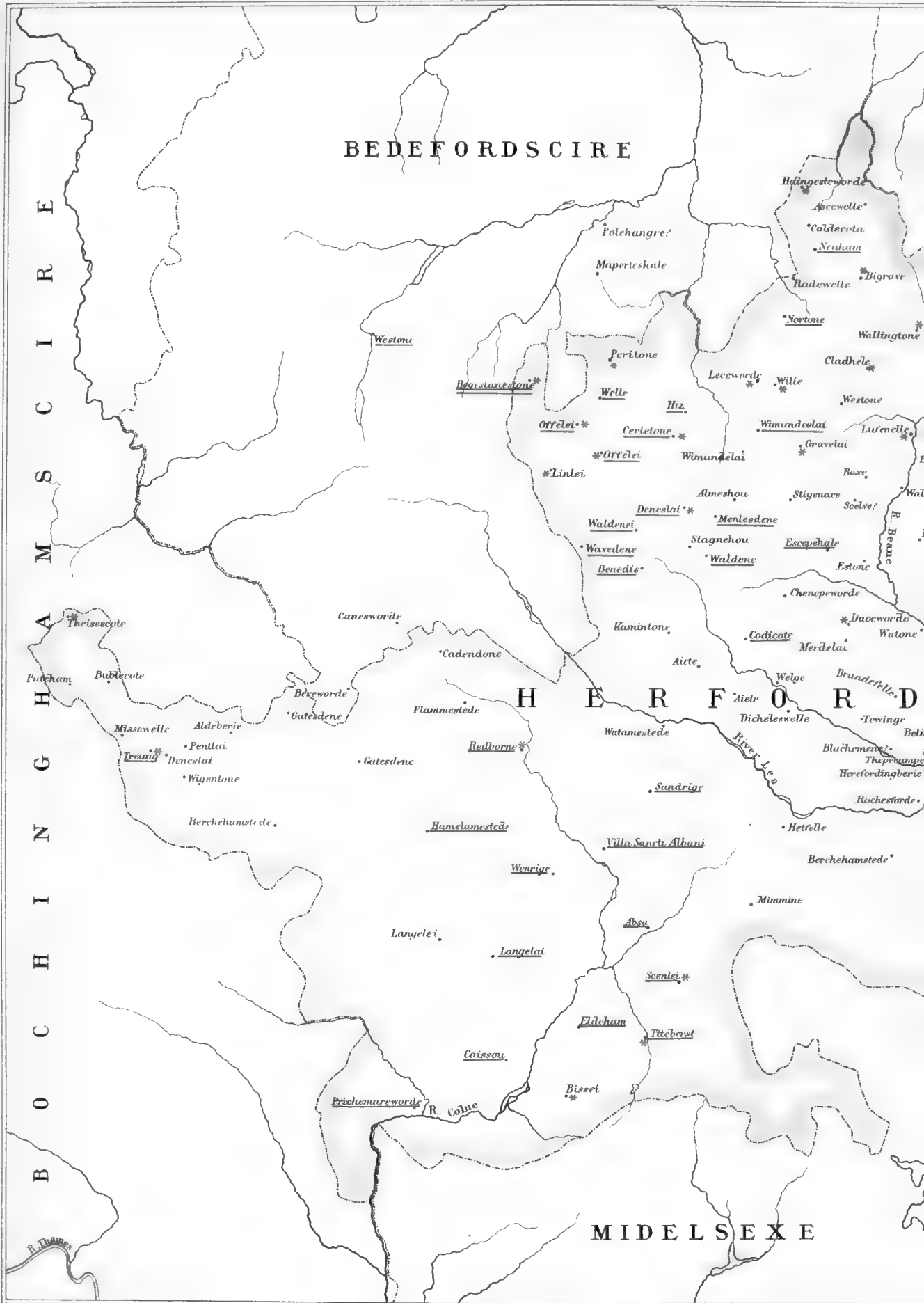
HERFORDSCIRE

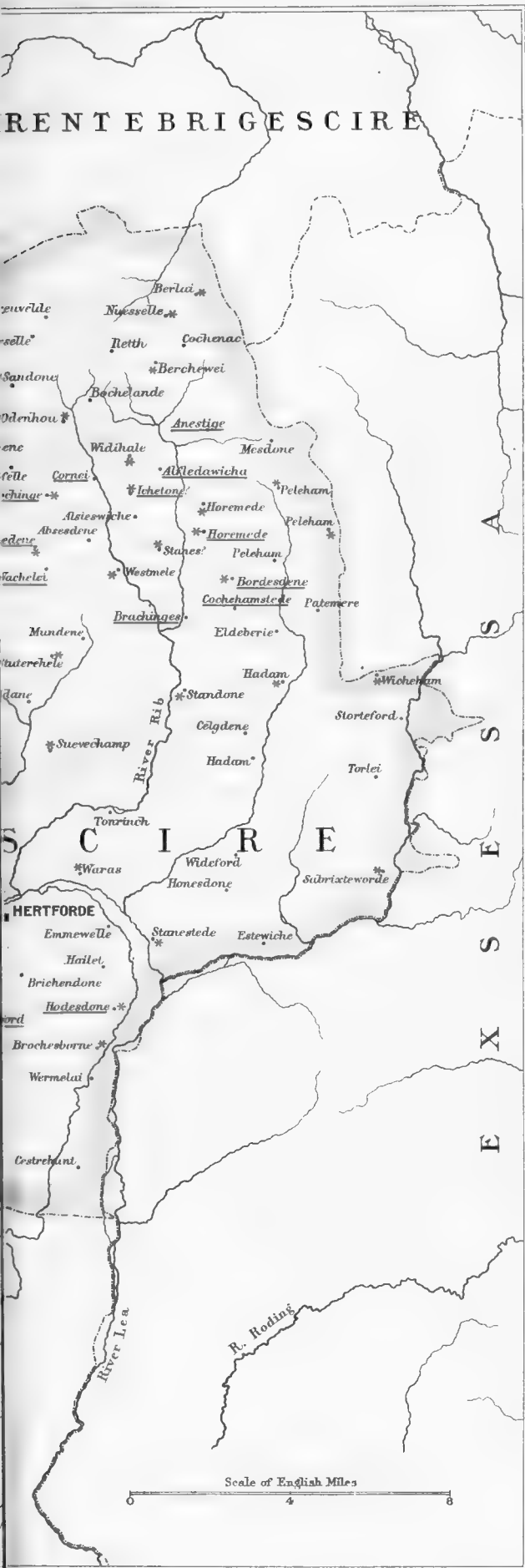
10. 132 The borough of Hertforde was assessed at 10 hides T.R.E. and now it is not assessed (*modo non facit*). There were 146 burgesses in the soke of king Edward. Of the (houses of) these count Alan now has 3 which rendered dues then and do so still. Eudo 'Dapifer' has 2 houses which were Algar's (of Cochenac) and then rendered dues and do so now ; and the same Eudo has a third house which was Ulmar's (of Etone) : this renders no dues. Geoffrey de Bech has 3 houses all rendering dues. Humfrey de Anslevile holds under Eudo 2 houses and 1 garden. Of these one was lent to one of the King's reeves (*cuidam prefecto regis*) ; the other, together with the garden, belonged to one of the burgesses, and now the burgesses claim them back as having been taken from them by injustice. King William has there 18 other burgesses who were earl Harold's men and earl Leuvin's. All these render dues. Peter de Valongies has 2 churches and a house with them, which he bought of Ulwi of Hatfelde [Hatfield], rendering all dues. Ulwi could assign (*dare*) or sell them. Geoffrey de Magneville has a certain holding which was Esgar the staller's and 7 houses which rendered no due except the King's geld when that was collected. Ralf Baniard has 2 houses which then rendered dues and do so now. Harduin de Scalers has 14 houses which Achi had T.R.E. They rendered no dues except the King's geld. For these Harduin claims the King as warrantor (*advocat regem ad protectorem*). Up to the present Harduin has 1 house as the King's gift which belonged to one of the burgesses, and he renders every due.

This township (*hoc suburbium*) pays 20 pounds assayed and weighed out, and 3 mills pay 10 pounds by tale. When Peter the sheriff received it it paid 15 pounds by tale ; T.R.E. it used to pay 7 pounds and 10 shillings by tale.

NOTE

The reader should bear in mind throughout that the date of the Domesday Survey is 1086, and that King Edward, to whose time it refers as 'T.R.E.,' died January 5, 1066. In Hertfordshire the value of an estate at the intermediate date when it passed into possession of the new holder is sometimes prefaced by the words 'when he received (it),' and sometimes only by the vague statement that it 'was worth' ; when the word 'always' is added, the meaning is that the value was the same at this intermediate date as at King Edward's death. The 'hide' was the unit of assessment on which the (Dane)geld was paid, and the 'virgate' was its quarter and was itself divided into 30 'acres.' The essential plough ('caruca') was its team of oxen, reckoned as eight in number ; thus 'half a plough' meant four oxen. The 'demesne' was the lord's portion of the manor, the peasantry holding the rest of it under him ; and a 'berewick' was an outlying estate dependent on the chief manor. 'Sokemen' and similar terms are discussed in the Introduction.





NOTES TO DOMESDAY MAP

Compiled by J. HORACE ROUND, M.A.

IN this map those manors in which the king had an interest have a scarlet line under their names; a blue line denotes these in which the chief ecclesiastical tenant, namely, St Alban's Abbey, held land; a green line indicates the manors in which land was held by the greatest lay tenant, Eustace, Count of Boulogne.

No attempt has been made to distinguish the Domesday Hundreds, which were somewhat intermixed, and of which the boundaries have changed. They are dealt with in the Domesday Introduction.

It should be remembered that the forms of place-names often vary in Domesday, and that only one variant can be given in each instance on the map. There are also in this county several Domesday names which it has not been possible to identify, and which consequently do not appear on the map. It should also be observed that the boundaries of this and the adjoining counties are for convenience of reference given as they now stand, and are not always those of 1086. For the same reason the names of the rivers are given in their modern forms; they are not mentioned in Domesday.

The Hertfordshire map is exceptionally instructive in the contrast it exhibits between the north-east of the county, with its numerous small manors, and the few large manors of its south-western portion. The latter consisted to a considerable extent of large blocks of land given of old to St Albans; but, in addition to this tenurial difference, there is reason to think that, at the time of Domesday, much of it was still forest land. The smaller manors of the north-east had been largely, before the Conquest, divided among 'sokemen,' as is explained in the Domesday Introduction. An endeavour has been made to indicate on the map the distribution of these 'sokemen' by placing an asterisk* against the names of these manors on which they were found at the death of Edward the Confessor.

REFERENCE TO COLOURING

| | |
|------------------------------------|---------------------|
| King's Manors | thus <u>Cerlton</u> |
| St Alban's Abbey's Manors | " <u>Elstham</u> |
| Count Eustace of Boulogne's Manors | " <u>Wachelei</u> |

HERE ARE NOTED THE LANDHOLDERS IN HERTFORDSHIRE

| | |
|--|---|
| I KING WILLIAM | xxiv Rannulf brother of Ilger |
| II The archbishop of Canterbury | xxv Hugh de Grentemaisnil |
| III The bishop of Winchester | xxvi Hugh de Beauchamp |
| IV The bishop of London | xxvii William de Ow |
| v The bishop of Bayeux | xxviii William de Odburgvile |
| vi The bishop of Lisieux | xxix Walter the Fleming |
| vii The bishop of Chester | xxx Eudo 'Dapifer' |
| viii The abbot of Ely | xxxi Edward de Saresberie |
| ix The abbot of Westminster | xxxii Geoffrey de Manneville |
| x The abbot of St. Albans ¹ | xxxiii Geoffrey de Bech |
| xi The abbess of Chatteris | xxxiv Goisbert de Beauvais |
| xii The canons of London | xxxv Peter de Valongies |
| xiii The canons of Waltham | xxxvi Harduin de Escalers |
| xiv The count of Mortain | xxxvii Edgar (the Ætheling) |
| xv Count Alan | xxxviii Maigno the Breton |
| xvi Count Eustace | xxxix Gilbert son of Salomon |
| xvii Earl Roger | xl Sigar de Cioches |
| xviii Robert de Olgi (Oilgi) | xli Derman and other Englishmen, the King's (men) |
| xix Robert Gernon | xlII Rothais the wife of Richard |
| xx Robert de Toden | xlIII Adeliz the wife of Hugh |
| xxi Ralf de Toden | xliv The daughter of Ralf Tailgebosch |
| xxii Ralf de Limesi | |
| xxiii Ralf Baniard | |

I. THE KING'S LAND

IN BRADEWATRE [BROADWATER] HUNDRET

King William holds WIMUNDESLAI [Wymondley]. It is assessed at 8 hides. There is land for 18 ploughs. In the demesne are 2½ hides, and on it are 3 ploughs; and 24 villeins and 1 sokeman and 5 bordars and 5

cottars have 15 ploughs (between them).² There are 6 serfs, and 1 mill worth 20 shillings. Meadow is there sufficient for 1 plough team and 2 oxen, and pasture sufficient for the live stock of the vill, and wood³ sufficient for the fences. This manor belonged to the demesne of the church⁴ of St. Mary of Cetriz [Chatteris], but earl Harold took it away from

¹ The abbot of Ramsey who follows the abbot of St. Albans, fol. 136, is omitted in the MS. in this list. See Introduction, p. 299.

² The words 'between them' have been supplied by the editor wherever they occur.

³ 'Nemus' (translated 'wood' throughout).

⁴ *i.e.* 'abbey.'

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that church, as the whole shire-moot (*syra*) testifies, and attached it to his manor of Hiz [Hitchin] 3 years before king Edward's death.

King William holds MENLESDENE [Minsden].¹ It is assessed at 4 hides. There is land for 8 ploughs. In the demesne there are 2 hides and 2½ virgates, and on it there are 3 ploughs. A priest with 8 villeins and 2 cottars have 3 ploughs between them, and there could be 2 more. There are 6 serfs. Meadow is there sufficient for 1 plough team, and pasture sufficient for the live stock of the vill. There is woodland² to feed 30 swine. This manor belonged and still belongs to (*jacuit et jacet in*) Hiz [Hitchin]. Earl Harold held it.

fo. 132b

IN THE HALF-HUNDRET OF HIZ [HITCHIN]³

King William holds HIZ [Hitchin]. It is assessed at 5 hides. There is land for 34 ploughs. In the demesne is 1 hide, and on it are 6 ploughs; and 41 villeins with 17 bordars have 20 ploughs between them. There could be 8 more. There are 22 cottars and 12 serfs, and 4 mills worth 53 shillings and 4 pence. Meadow is there sufficient for 4 plough teams, pasture sufficient for the live stock of the vill, and woodland to feed 600 swine. This manor earl Harold held.

Of these 5 hides 2 belong to the minster (*monasterium*) of this vill. There is land (in them) for 4 ploughs. In the demesne is 1 hide and a half, and there is 1 plough on it and there could be another; and 4 villeins have 2 ploughs between them, and there are 7 cottars. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock. These 2 hides are worth 6 pounds; when received they were worth 40 shillings; T.R.E. worth 4 pounds. This manor earl Harold held.

King William holds WELEI [].⁴ It is assessed at 2 hides. There is land for 7 ploughs. In the demesne is 1 hide; 2 ploughs are on it; and 8 villeins with 5 bordars have 4 ploughs between them, and there could be a fifth. There are 2 cottars and 4 serfs. Pasture is there sufficient for the live stock of the vill, and woodland to feed 300 swine. Earl Harold held this manor, and it belongs (*jacet in*) to Hiz [Hitchin], to which it belonged (*jacuit*) T.R.E.

¹ *Alias* Minsdenbury. The ruins of Minsden chapel remain (J.H.R.).

² 'Silva' (translated 'woodland' throughout).

³ Now part of Dacorum Hundred.

⁴ See Introduction, p. 297.

King William holds WESTONE [Weston].⁵ It is assessed at 5 hides. There is land for 14 ploughs. In the demesne are 2 hides, and on it are 2 ploughs; and 16 villeins with 3 bordars have 5 ploughs between them, and there could be 5 more.⁶ There are 4 serfs. Meadow is there sufficient for 7 plough teams, pasture sufficient for the live stock of the vill, woodland to feed 400 swine, and worth 3 shillings besides. This manor earl Harold held, and it belonged, and still belongs, to Hiz [Hitchin]. But its 'wara' (place of its assessment) was in Bedfordshire T.R.E., in the Hundret of Maneheue [Manshead], and there the manor to which it belonged is and always was; and after king Edward's death it ceased to pay the King's geld.

King William holds WALDENEI [King's Walden]. It is assessed at 2 hides. There is land for 20 ploughs.⁷ In the demesne are 2 virgates, and 2 ploughs are on it. A priest with 13 villeins and 4 bordars have 6 ploughs between them, and there could be 2 more. There are 2 cottars and 4 serfs. Meadow is there sufficient for half a plough team, pasture sufficient for the live stock of the vill, woodland to feed 400 swine. Its total value is and was 8 pounds; T.R.E. 10 pounds. Leueva held this manor of earl Harold and could sell without obtaining his consent. In the King's service it finds (*inven*) 1 'avera' (carrying service of 1 load) and 1 'inward' (bodyguard service),⁸ but this is perforce and by injustice, as the shire-moot (*scyra*) testifies. Of these 2 hides a widow, Asgar's wife, holds 1 hide of the King as 1 manor; and she has there 1 plough, and 17 villeins and 7 bordars. These have 6 ploughs between them, and there could be 3 more. There are 5 cottars. Meadow is there sufficient for a half-plough team, woodland to feed 400 swine, pasture sufficient for the live stock of the vill. Its total value is and was 4 pounds; T.R.E. 8 pounds. The same woman held this manor T.R.E. of earl Harold and could sell without obtaining his consent, and it used to find, (but)

⁵ This has been identified by Hertfordshire historians as the manor of Weston Argentine in Weston in Broadwater Hundred, but I feel sure that it is Westoning in Bedfordshire, which was and is in Manshead Hundred, and to which the suffix 'ing' was only added later (J.H.R.).

⁶ These details do not tally with the given total of ploughlands (J.H.R.)

⁷ This entry needs explanation. There were here 2 distinct manors, each assessed at 1 hide and each containing 10 ploughlands. They are separately surveyed in this entry (J.H.R.).

⁸ See, for these services, Introduction, pp. 269-71.

THE HOLDERS OF LANDS

unjustly and perforce, 1 'avera' (carrying service of 1 load) and 'inward' (bodyguard service)¹ for the King; so the shire-moot (*scyra*) testifies. These 2 manors Ilbert when he was sheriff added to Hiz [Hitchin] as the hundred (court) attests.

King William holds **WAVEDENE**² [Wandon (End) in King's Walden]. It is assessed at 3 virgates. There is land for 2 ploughs and 6 oxen, and these are there, with 6 villeins. There is woodland for 40 swine. This land earl Harold held in his manor of Hiz [Hitchin], and to this manor it now belongs (*jacet*).

King William holds **CERLETON** [Charlton].³ It is assessed at 1 virgate. There is land for 1 plough, and this is there with 2 cottars, and 1 mill worth 20 pence. Its value is and always was 10 shillings. Two sokemen held this land of earl Harold and could sell without his leave. The soke was always in Hiz [Hitchin]. Ilbert when he was sheriff added it to Hiz.

King William holds **DENESLAI** [Temple Dinsley]. It is assessed at 7 hides. There is land for 20 ploughs. In the demesne are 3½ hides, and 3 ploughs are on it; and 19 villeins have 8 ploughs between them, and there could be 9 more. There are 7 bordars and 7 cottars and 6 serfs and 1 Frenchman, a King's almsman (*elemosinarius*), there. There are 2 mills worth 16 shillings, meadow sufficient for 1 plough team, pasture sufficient for the live stock of the vill, woodland to feed 300 swine. It pays in all yearly 14 pounds assayed and weighed out, and 5 pounds by tale. It paid the same sums T.R.E. and when Peter the sheriff received it. Two sokemen held this manor as 2 manors of earl Harold T.R.E. and could sell. Yet they each found 2 'avera' (carrying service of 2 loads) and 2 'inwardi' (men for bodyguard) in Hiz [Hitchin]; but (it was by) injustice and by force, as the hundred (court) testifies. These 2 manors Ilbert held as one, and he was seized thereof by the King's 'brief' for as long as he was sheriff, as the shiremoot (*scyra*) testifies. But after he ceased to be sheriff Peter de Valongies and Ralf Tailgebosch took this manor from him and attached

it to (*posuerunt in*) Hiz [Hitchin] because he refused to find the 'avera' for the sheriff. Geoffrey de Bech, Ilbert's successor, claims in regard to this manor to have the King's mercy (*reclamat pro hoc manerio misericordiam regis*).

King William holds **OFFELEI** [Offley]. It is assessed at 2 hides. There is land for 9 ploughs. Five sokemen held it T.R.E. and they hold it now of king William. There are 8 ploughs, and there could be a ninth. There are 2 villeins and 17 bordars and 3 cottars and 3 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 120 swine, and wood sufficient for the fences. Its total value always has been 4 pounds and 4 shillings. These same men held it of earl Harold and could assign (*dare*) or sell. The soke however always belonged to (*jacuit in*) Hiz [Hitchin]. They found 2 'avera' and 2 'inwardi' (service of 2 loads, and 2 men for the bodyguard).

In this same vill Edward of Periton [Pirton] holds 3 virgates. There is land for 2 ploughs; a half-plough is there, and there could be another plough and half-plough. There is 1 villein; and wood sufficient for the fences. Its value is 5 shillings; when received it was 6 shillings and 8 pence; T.R.E. 10 shillings. Of this land Aluin, a man of archbishop Stigand's, held half a hide, and a man of earl Harold's, Abo by name, held 1 virgate. These could assign (*dare*) or sell their land, but its soke remained in Hiz [Hitchin].

In the other **OFFELEI** [Offley] 1 sokeman holds 1 hide. There is land for 2 ploughs. One plough is there, and there could be another. There are there 1 villein and 1 bordar and 1 cottar; and there is wood sufficient for fencing. Its value has always been 26 shil-

lings and 8 pence. He who now holds it held it T.R.E. of earl Harold and could sell. The soke remained in Hiz [Hitchin]. He rendered 1 'avera' and 1 'inward' (carrying service of 1 load, and 1 man for bodyguard). This sokeman and the 5 above of Offelei Ilbert de Hertford attached to (*apposuit in*) Hiz [Hitchin].

In **WELLE** [Well(bury)]⁴ 1 sokeman holds 1 hide. There is land for 5 ploughs. On the demesne is 1, and there could be 2 more. There 4 bordars have 1 plough between them,

¹ See, for these services, Introduction, pp. 269-71.

² It is just possible that the Domesday scribe mistook 'Wavedene' for 'Wawedene,' and then wrote the latter as 'Wavedene' (J.H.R.).

³ *Alias* Moremead manor.

⁴ In Offley. See Introduction, p. 297.

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and there could be another. Pasture is there sufficient for the live stock of the vill; wood sufficient for the fences. Altogether it is worth 26 shillings and 8 pence. When Peter (the sheriff) received it it was worth 40 shillings; T.R.E. 60 shillings. Leueva held this land of earl Harold and could sell. Ilbert attached it to his manor of Linleia [Lilley] when he was sheriff. After he was deprived Peter de 'Valonges' and Ralf 'Talgebosc' took it from him and attached it (*posuerunt in*) to Hiz [Hitchin], as the whole shire-moot (*scyra*) testifies. It did not belong there T.R.E. nor did it render any dues.

In WELEI []¹ 1 sokeman holds 1 hide. There is land for 2 ploughs, and the ploughs are there. There are 2 villeins and 1 bordar and 9 cottars. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock of the vill, and wood sufficient for the fences. To this land belongs (*adjacet*) a piece of woodland sufficient to feed 50 swine which Osmund de Valbadon (*Valle Badonis*) seized to the wrong of king William (*invasit super*). It was in the soke of Hiz [Hitchin] T.R.E., as the shire-moot (*scyra*) testifies. This land is worth, as it was worth, 20 shillings; T.R.E. 30 shillings. Goduin, a man of earl Harold's, held this land and could sell. Peter the sheriff attached it to the 'firm' in Hiz [Hitchin],² to which it did not belong T.R.E. nor did it render dues there. This land Ilbert had given to a knight (*miles*) of his when he was sheriff; and as regards it Geoffrey de Bech claims the King's mercy (*reclamat misericordiam regis*).³

In WILEI []⁴ 1 sokeman holds half a hide. There is land for 1 plough, and a plough is there with 1 cottar. Wood is there (sufficient) for the fences. It is worth 10 shillings; when received it was worth 5; T.R.E. it was worth 16 shillings. Edmund, a man of earl Harold's, held this land and could sell, but the soke remained in Hiz [Hitchin]. It finds 1 'avera' (carrying service of 1 load).

In FLESMERE [Flexmere?] 1 sokeman holds

¹ See Introduction, p. 297.

² 'Posuit in Hiz ad firmam.' The meaning seems to be that he threw it into the Hitchin group of manors which was 'farmed' as a whole (J.H.R.).

³ Geoffrey de Bech had succeeded to Ilbert's fief (J.H.R.).

⁴ See Introduction, p. 297.

a half-virgate. There is land for a half-plough, and this is there and 4 cottars. Pasture is there sufficient for the live stock, and woodland to feed 5 swine. It is and was worth 40 pence; T.R.E. 60 pence. He who now holds it held it T.R.E.; (he was) a man of earl Harold's, and could sell. It rendered 1 'avera' in Hiz [Hitchin].

In LEGLEGA [? Ley Green]⁵ 3 sokemen hold 1 virgate. There is land for 1 plough and a half-plough, and these are there with 4 bordars. Woodland is there to feed 40 swine. It is worth, and always was, 26 shillings and 8 pence. Three men of earl Algar's held this land. They could not sell it to separate it from (*vendere extra*) Hiz [Hitchin].

In HEGESTANESTONE [Hexton] 1 sokeman of the King's holds 1 virgate. There is land for a half-plough, and this is there and 1 villein. It is and was worth 20 pence; T.R.E. 40 pence. He who now holds it, a man of the abbot's of St. Alban, held it T.R.E. and could sell. This land earl Harold attached to Hiz [Hitchin] by force and by injustice, as the shire-moot (*scyra*) testifies.

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King William holds BEGESFORD [Bayford].⁶ It is assessed at 10 hides. There is land for 20 ploughs. In the demesne are 2 hides and 3 virgates, and on it are 3 ploughs. A priest and reeve (*prepositus*) of this vill with 22 villeins have 15 ploughs between them, and there could be 2 more. There are 9 cottars and 1 serf, and 2 mills worth 26 shillings. Meadow is there sufficient for 20 plough teams, pasture sufficient for the live stock and worth 2 shillings besides, and woodland to feed 500 swine. In all it pays 16 pounds by tale; when the sheriff received it it paid 8 pounds; T.R.E. 20 pounds. Earl Tosti held this manor, but king Edward had it in demesne on the day on which he died.

In all, Hiz [Hitchin] with its appurtenances pays 106 pounds assayed and weighed out, and 10 pounds by tale. When Peter the sheriff received it (it was) 86 pounds; T.R.E. 60 pounds from Hiz and from the sokes (*sach'*) belonging thereto 40 pounds by tale.

⁵ There is a Ley Green just north of King's Walden which is suggestive of 'Leglega' (J.H.R.).

⁶ This appears to have included Essendon as well as Bayfordbury (J.H.R.).

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II. THE LAND OF THE ARCH-BISHOP OF CANTERBURY

IN BRADEWATRE [BROADWATER] HUNDRET

Archbishop Lanfranc holds 1 hide in DACEWORDE [Datchworth], and Anschitil¹ (holds it) of him. There is land for 2 ploughs. On the demesne is 1 plough, and 3 villeins and 2 bordars have 1 plough between them. The pasture is half enough for 1 ox (*dim[idio] bovi*). Woodland is there to feed 50 swine. It is worth 30 shillings; when received, 20 shillings; T.R.E. 60 shillings. Alvrice Blac held this land of the abbot of Westminster T.R.E. He could not alienate it from that church. So the hundred (court) testifies. But in regard to other lands he was archbishop Stigand's man.

In WATONE [Watton] Anschitil holds of the Archbishop 2½ hides. There is land for 6 ploughs. On the demesne is 1, and there could be another. There 3 villeins with a priest and 2 bordars have 2 ploughs between them, and there could be 2 more. Meadow is there sufficient for a half-plough team, woodland to feed 100 swine, pasture sufficient for the live stock. There are 2 mills worth 17 shillings. It is and was worth 50 shillings; T.R.E. 4 pounds. Of this land Alvrice Blac held 2 hides of the abbot of Westminster; he could not alienate them from that church; and Almar, a man of the same Alvrice's, held 1 half-hide and could sell.

In ESCEPEHALA [Sheephall] Anschitil holds of the Archbishop 2 hides. There is land for 5 ploughs. On the demesne is 1, and there could be another. And 3 villeins have 2 ploughs between them, and there could be a third. Meadow is there sufficient for a half-plough team; woodland to feed 20 swine. It is worth 3 pounds; when received 40 shillings; T.R.E. 4 pounds. This land Alvrice, a man of archbishop Stigand's, held. It belonged to the demesne of the church of St. Alban² T.R.E., and he could not sell nor alienate it from that church.

In STUTEREHELA [Libury³] an Englishman holds 2 acres of land of the Archbishop. It has always been worth 2 shillings. The same man held it T.R.E. in mortgage (*in vadium*). He could sell.

¹ This was Anschitel de Ros. See Introduction.

² St. Alban's Abbey.

³ A manor in Little Mundon, now a farm.

In STUOCHAMPE [? Sacomb] Anschitil holds of the Archbishop half a virgate. There is land for 2 oxen (to plough). Its value always has been 15 pence. Alvrice Blac, a man of archbishop Stigand's, held this land and could sell.

III. THE LAND OF THE BISHOP OF WINCHESTER

IN ODESEI [ODSEY] HUNDRET

Bishop Walchelin of Winchester holds CHODREI [Cottered]. It is assessed at 5 hides. There is land for 6 ploughs. In the demesne is 1 hide and a half. There is 1 plough on it; and 13 villeins with 6 bordars have 5 ploughs between them. There is 1 serf. Pasture is there sufficient for the live stock, woodland to feed 100 swine and worth 12 pence besides. In all its value is 60 shillings; when received 40 shillings; T.R.E. 6 pounds. This manor belonged and belongs to (*jacuit et jacet in dominio*) the demesne of St. Peter of Winchester.⁴

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IV. THE LAND OF THE BISHOP OF LONDON

The bishop of London holds 1 hide and a half in TROCHINGE⁵ [Throcking], and Humfrey (holds them) of him. There is land for a plough and a half-plough, and these are there, and 2 villeins and 1 bordar and 1 cottar. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, and wood sufficient for the fences. It is worth 52 shillings; when received 30 shillings; T.R.E. 40 shillings. This land was held by two brothers, bishop William's men. It belonged to the King's soke and they could sell. Of dues they gave 6 pence to the sheriff or else did carrying service of 1 load and a half (*una avera et dim'*). Of this land 1 virgate was and is in mortgage (*in vadium*). Humfrey discharges the King's geld on it, and yet he is not in possession. This land is (part) of the purchase of bishop William, as the Bishop's men say, but the men of the shire-moot (*scira*) do not support them in this.

The Bishop himself holds HADAM [Hadam]. It is assessed at 7½ hides. There is land for 22 ploughs and a half-plough. In the

⁴ i.e. the 'Old Minster,' now the cathedral (J.H.R.).

⁵ The manors in Edwinstree Hundred begin here.

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demesne are 2 hides, and there are 6 ploughs on it. A priest with 35 villeins and 1 knight (*miles*) have 15 ploughs between them. There are 6 bordars and 2 cottars and 12 serfs, and 1 mill worth 4 shillings. Meadow is there sufficient for 4 plough teams; pasture sufficient for the live stock, and woodland to feed 200 swine. Its total value is and was 20 pounds; T.R.E. 24 pounds. This manor belonged and belongs to the bishopric of London.

The Bishop himself holds WIDFORD¹ [Widford]. It is assessed at 3 hides. There is land for 5 ploughs. In the demesne are 2 hides, and on it are 2 ploughs. Five villeins with 8 bordars have 3 ploughs between them. There is 1 cottar and there are 3 serfs, and 1 mill worth 5 shillings. Meadow is there sufficient for 2 plough teams, woodland to feed 50 swine. Its value is and was 100 shillings; T.R.E. 8 pounds. Eldred, a thegn of king Edward's, held this manor and could sell.

IN WIDFORDE [Widford] Tedbert holds of the Bishop 1 hide. There is land for 2 ploughs. One is there, and there could be another. There are 8 bordars. Meadow is there sufficient for a half-plough team, and woodland to feed 30 swine. Its value is and was 40 shillings; T.R.E. 60 shillings. Alward, a man of archbishop Stigand's, held this land and could sell.

IN CELGDENE [Chaldean²] Roderi holds of the Bishop half a hide. There is land for 2 ploughs. One is there, and there could be another. There is 1 bordar and there are 4 serfs. Woodland is there to feed 50 swine, meadow sufficient for 1 plough team. Its value is and was 30 shillings; T.R.E. 40 shillings. This land Ældred, a thegn of king Edward's, held and could sell.

William holds PARVA HADAM³ [Little Hadham] of the Bishop. It is assessed at 2 hides. There is land for 3 ploughs. On the demesne are 2, and 4 bordars are there with 1 plough. There are 4 cottars and 3 serfs. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock, woodland to feed 30 swine. Its value always has been 4 pounds. This manor 3 sokemen held. One of these, a man of archbishop Stigand's, held

1 hide all but half a virgate; another, a man of Robert fitz Wimarc's, had 3½ virgates; and the third, a sokeman of king Edward's, held 1 virgate. This last paid 1 penny to the sheriff. These could sell.

IN HADAM [Much Hadham] William holds a half-hide of the Bishop. There is land for 1 plough. A half-plough is there, and there could be another. There is 1 cottar. Its value is and was 15 shillings. Edric, a man of Asgar the staller's, held this land and could sell.

IN LEWAREWICHE [] William holds of the Bishop 1 hide and a half. There is land for 4 ploughs. On the demesne are 2, and there could be a third. Three villeins there have 1 plough between them. There are 2 cottars and 4 serfs. Meadow is there sufficient for 2 oxen, and pasture for the live stock of the vill, and wood for the fences. Its value is and was 50 shillings; T.R.E. 60 shillings. This manor Leware held of bishop William. Half a hide of it he could sell, but 1 hide he could not sell without the Bishop's leave.

IN HADAM [Much Hadham] Osbern holds of the Bishop 1 hide. There is land for 2 ploughs. On the demesne are 1 plough and a half-plough; 1 villein has a half-plough. There are 6 cottars and 1 serf. Its value always has been 40 shillings. This land 2 sokemen held. One of these, a man of earl Algar's, had half a hide; the other had a half-hide belonging to the King's soke, and he paid 2 pence to the sheriff. Either could sell.

IN PATEMERE [Patmore Hall in Albury] Baldwin holds of the Bishop 1 hide and 3 virgates. There is land for 4 ploughs. On the demesne are 2, and 2 villeins have 1 plough between them, and there could be another. There are 2 bordars and 6 cottars and 3 serfs. Meadow is there sufficient for 2 oxen, woodland to feed 60 swine. Its value has always been 4 pounds. This land Alward, a man of earl Algar's, held and could sell.

Ralf holds ELDEBERIE [Albury] of the Bishop. It is assessed at 2½ hides. There is land for 9 ploughs. On the demesne are 2, and 6 villeins and 9 bordars have 6 between them, and there could be a seventh. There are 3 cottars and 3 serfs. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock, woodland to feed 30 swine. Its value is and was 7 pounds; T.R.E. 8 pounds. Siward, a man of archbishop Stigand's, held this manor and he could sell.

¹ The manors in Braughing Hundred begin here.

² A farm in Much Hadham (J.H.R.).

³ The manors in Edwinstree Hundred begin here.

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In PELEHAM [Pelham] Ralf holds of the Bishop 1 hide and 1 virgate. There is land for 5 ploughs. On the demesne are 2, and there could be a third. There 2 villeins and 3 bordars have 2 ploughs between them. There are 5 serfs and 1 cottar. Pasture is there for the live stock, and woodland to feed 20 swine. Its value is and was 4 pounds; T.R.E. 5 pounds. Two brothers, Asgar the staller's men, held this, and they could sell.

In PELEHAM [Pelham] Payn holds 1 hide of the Bishop. There is land for 3 ploughs. On the demesne are 2, and 1 villein has a half-plough, and there could be another half-plough. There are 3 bordars and 3 cottars. Woodland is there to feed 6 swine. Its value is and was 40 shillings; T.R.E. 50 shillings. This manor was held by Alvred, a man of Asgar the staller's, and he could sell.

In PELEHAM [Pelham] Rannulf holds of the Bishop 2½ hides. There is land for 8 ploughs. On the demesne are 2, and 7 villeins with 5 bordars have 6 between them. There are 6 cottars and 6 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, and woodland to feed 30 swine. Its value is and was 10 pounds; T.R.E. 15 pounds. This manor 2 thegns held. One of them was a man of Anschil of Ware (*Waras*); the other was a man of Godwine (of) Benefel [? Bendfield]. These could sell.

In PELEHAM [Pelham] Gilbert and Rannulf hold of the Bishop 1 hide and 1 virgate. There is land for 3 ploughs. On the demesne is 1, and 1 villein and 3 bordars have 1 plough between them, and there could be another. There are 7 cottars. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, and woodland to feed 100 swine. Its value is and was 40 shillings; T.R.E. 60 shillings. Two brothers held this land and could sell. One was a man of Asgar the staller; the other a man of the abbot of Ely.

In PELEHAM [Pelham] 2 knights (*militēs*) hold 3 hides and 1 virgate of the Bishop. There is land for 7 ploughs. On the demesne are 3, and a priest and (*cum*) 7 villeins have 4 between them. There are 7 bordars and 6 cottars and 1 serf. Meadow is there sufficient for 2 plough teams and a half-plough team, pasture sufficient for the live stock, and woodland to feed 100 swine. Its value is and was 5 pounds; T.R.E. 6 pounds. This manor 2 thegns held—one a man of

Aschi of Ware (*Wara*), the other of Almar of Belintone [Bennington]. Together with these, 5 sokemen of king Edward's soke held 5 virgates and could sell.

In MESDONE [Meesden] Payn holds 1 hide of the Bishop. There is land for 5 ploughs.
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On the demesne there could be 2, and 3 villeins and a priest have 3 between them. There is 1 [¹] and 1 serf. Meadow is there sufficient for 3 plough teams, pasture sufficient for the live stock, woodland to feed 400 swine. Its value is and was 20 shillings; T.R.E. 6 pounds. This manor Alward, a man of archbishop Stigand's, held and could sell.

In PELEHAM [Pelham] Eldred holds 1 hide of the Bishop. There is land for 2 ploughs. 1 plough and a half-plough are there, and there could be another half-plough. There are 8 bordars and 2 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, and woodland to feed 20 swine. Its value is and was 20 shillings; T.R.E. 40 shillings. This land Alwin, a man of Godwine of Benefelle [? Bendfield], held, and could sell.

In PELEHAM [Pelham] Riculf holds 2 hides of the Bishop. There is land for 4 ploughs. On the demesne are 2, and 4 villeins and 3 bordars have 2 ploughs between them. There are 10 cottars and 3 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 40 swine. Its value is and was 100 shillings; T.R.E. 5 pounds and 10 shillings. This manor was held by Wlwi, a man of Godwine of Benedfelle [? Bendfield], and he could sell.

In TEDRICESHAM [Tedresham²] William and Rannulf hold of the Bishop 1 hide and a half. There is land for 3 ploughs. On the demesne are 2, and 2 villeins with 3 bordars have 1 plough between them. There are 1 cottar and 1 serf; woodland to feed 60 swine, pasture sufficient for the live stock. Its value is and was 40 shillings; T.R.E. 60 shillings. This land Wlwi, a man of Asgar the staller, held and could sell.

These 36 hides the bishop of London holds, and his knights (*militēs*); and he claims (that there ought to be) with these

¹ Entry apparently defective.

² A manor in (Furieux?) Pelham (J.H.R.).

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(hides) 4 hides which the abbot of Ely holds in Hadam [Hadham].¹

IN BRACHINGS [BRAUGHING] HUNDRET

The same Bishop holds STORTEFORD [Bishop Stortford]. It is assessed at 6 hides. There is land for 10 ploughs. In the demesne are 4½ hides, and on it are 2 ploughs, and there could be a third. There 6 villeins with 8 bordars have 4 ploughs between them, and there could be 3 more. A priest, 2 knights and 12 cottars are there, and 2 mills worth 30 shillings. Meadow is there sufficient for 1 plough team, and woodland to feed 300 swine. Its total value is and was 8 pounds; T.R.E. 10 pounds. This manor Eddeva the fair (*pulchra*) held, and it is part of the 'fee' which bishop William bought.

In TORLEI [Thorley] Roderi holds half a hide of the Bishop. There is land for 1 plough, and the plough is there, with 2 serfs. Meadow is there sufficient for a half-plough team, and woodland to feed 2 swine. It is and was worth 20 shillings; T.R.E. 30 shillings. This land Edzi, a man of Godeed, held, and could sell; and he used to pay 2 pence to the sheriff.

In WICHEHAM [Wickham]² Humfrey holds 2 hides and 20 acres as one manor of the Bishop. There is land for 3 ploughs. On the demesne are 2, and 4 villeins and 2 bordars have 1 between them. There are 8 cottars and 1 serf. Meadow is there sufficient for a half-plough team, woodland to feed 30 swine. It is and was worth 40 shillings; T.R.E. 60 shillings. This land 4 sokemen held and could sell.

In WICHEHAM [Wickham]³ 2 knights (*milites*) hold of the Bishop 1 virgate and a half. There is land for a half-plough, but this is not there. Woodland is there to feed 20 swine, and there is 1 villein. It was and is worth 8 shillings; T.R.E. 10 shillings. This land 3 sokemen held and could sell. One of these was a man of bishop William, another of Asgar the staller, and the third of Eddeva the fair (*pulchra*). This land belongs to the 'fee' of bishop William.

V. THE LAND OF THE BISHOP OF BAYEUX

IN TREUNGA [TRING] HUNDRET³

The bishop of Bayeux holds PUTEHAM

¹ See p. 312 below.

² Wickham Hall, in Hadham.

³ Now part of Dacorum Hundred.

[Puttenham]. It is assessed at 4 hides. Roger holds (it) of the Bishop. There is land for 4 ploughs. On the demesne there is 1, and there could be another. There 4 villeins with 2 bordars have 2 ploughs between them. There are 4 cottars and 2 serfs, and 2 mills worth 10 shillings and 8 pence. Meadow is there sufficient for 4 plough teams and worth 4 shillings besides; pasture is there sufficient for the live stock. It is worth 60 shillings; when received 40 shillings; T.R.E. 4 pounds. Earl Lewin held this manor.

IN DAN AIS [DACORUM] HUNDRET

In TITEBERST [Titeberst⁴] Adam⁵ holds of the Bishop half a hide. There is land for 2 oxen (to plough). There is 1 bordar. Woodland is there to feed 20 swine. It is worth 10 shillings; when received 5 shillings; and 5 shillings also T.R.E. This land Alward held of the abbot of St. Albans and could not sell except by his consent.

IN ALBANESTOU [CASHIO] HUNDRET

The same Adam holds of the Bishop LAMPETH [] for a ½ hide. There is land for 1 plough, but it is not there. Woodland is there for 50 swine. It is worth 10 shillings; when received 5 shillings; T.R.E. 20 shillings. This land Alnod Grutt held and could sell.

IN BRADEWATRE [BROADWATER] HUNDRET

In GRAVELAI [Graveley] Adam holds of the Bishop 1½ hides and 10 acres. There is land for 3 ploughs. On the demesne is 1, and there could be another. There 4 villeins and 3 bordars have 1 plough between them. There are 2 serfs. Wood is there sufficient for the fences, and pasture sufficient for the live stock. It is worth 20 shillings; when received 50 shillings; and 50 also T.R.E. Alnod held 1 hide and a half of this land, and Bruning 10 acres. Both could sell. Yet Bruning (*hic*) used to render as dues to the sheriff 1 half-penny (yearly).

In ALMESHOU [Almeshoe in Ippolitts] Adam holds of the Bishop 1 hide. There is land for 1 plough, and the plough is there, with 3 bordars. There is woodland for 60 swine. It is worth 20 shillings; when re-

⁴ A manor in Aldenham, now represented by Kendalls, so named from a family which held part of the manor.

⁵ This was Adam, son of Hubert de Rye and brother of Eudo 'dapifer' (J.H.R.).

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ceived 10 shillings; T.R.E. 30 shillings. Edmund, a man of earl Harold's, held this land and could sell.

In WIMUNDESLAI [Wymondley] Adam holds of the Bishop 1 hide and 1 virgate. There is land for 1 plough, and the plough is there, with 3 bordars. Meadow is there sufficient for a half-plough team. It is and was worth 10 shillings; T.R.E. 20 shillings. This land Alftet held of Robert fitz Wimarc and could not sell without (obtaining) his leave, as the shire-moot (*scira*) testifies.

In BOXE [Boxbury in Stevenage] Osbern holds of the Bishop half a hide. There is land for 1 plough, and there is 1 bordar. It has always been worth 10 shillings. Samar, a man of Alnod's, held it and could sell.

The Bishop himself holds ESTRONE [Aston]. It is assessed at 10 hides. There is land for 15 ploughs. In the demesne are 4 hides, and there are on it 4 ploughs, and there could be a fifth. A priest there and 11 villeins with 5 bordars have 5 ploughs between them, and there could be other 5. There are 6 cottars and 4 serfs. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 200 swine. The total value is 18 pounds; when received 14 pounds; T.R.E. 20 pounds. This manor 3 of archbishop Stigand's men held and could sell.

In SUTRESHELE [Libury¹] Peter holds of the Bishop 1 hide and 1 virgate and 10 acres. There is land for 1 plough, and the plough is there, and 2 villeins and a Frenchman. There is woodland for 30 swine. It is worth 10 shillings; when received 7 shillings; T.R.E. 20 shillings. This land 2 sokemen held, earl Lewin's men. They were of king Edward's soke and they could sell. They used to furnish to the King's sheriff 1 'avera' (the carrying service of 1 load) or 5 pence and 1 farthing yearly.

In the same vill the Bishop holds 2 hides and 1 virgate and 9 acres. There is land for

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2 ploughs, but no plough is there. In the demesne are 2 hides and 9 acres, and 3 bordars, and 1 mill worth 16 pence. Meadow is there sufficient for 2 oxen, woodland to feed

55 swine. It is and was worth 20 shillings; T.R.E. 40 shillings. This land 3 of archbishop Stigand's men held and could sell; and a man of Leuuin Scoua had half a hide and could sell. He rendered half an 'avera' (carrying service of half a load) or 2 pence to the sheriff.

In the same vill Turstin holds 2 hides of the Bishop. There is land for 2 ploughs, but there is nothing there (*non sunt ibi*) except 2 cottars and 1 mill worth 4 shillings. Meadow is there sufficient for 2 oxen, woodland to feed 100 swine. It is and was worth 30 shillings; T.R.E. 60 shillings. This land was held by Almar of the King's soke. He was a man of Asgar the staller's and could sell. He used to render to the sheriff 2 'avera' (the carrying service of 2 loads) or 8 pence.

In the same vill the Bishop himself holds 11 acres. They have always been worth 11 pence. Alward held them of archbishop Stigand.

IN ODESEI [ODSEY] HUNDRET

In LUFENHATE [Luffenhall] Osbern holds of the Bishop 2½ hides. There is land for 5 ploughs. On the demesne are 3 ploughs, and 3 bordars with 3 villeins have 2 between them. There are 4 cottars and 4 serfs. There is wood sufficient for the fences. It is and was worth 40 shillings; T.R.E. 60 shillings. This land 3 sokemen held. Two of these, archbishop Stigand's men, held 1½ hides and could sell; the third, a man of Almar of Belintone [Bennington], held 1 hide and could sell. He rendered 1 'avera' or 4 pence.

In CLADHELE [Clothall] Osbern holds of the Bishop 7 hides and 3½ virgates. There is land for 10 ploughs. On the demesne are 2, and there could be a third. Eight villeins with 12 bordars have 7 ploughs between them. There are 3 cottars and 4 serfs. Wood is there sufficient for the fences, pasture sufficient for the live stock. Its value in all is 7 pounds; when received it was 5 pounds; T.R.E. it was 10. This manor Alnod Grud, a man of archbishop Stigand's, held and could sell. Of this land 3 sokemen, archbishop Stigand's men, held 2 hides and 3 virgates. They were not there in king Edward's time, but after his death they were attached to (*appositi*) this manor and could sell their land. They used to render as dues to the sheriff 11 pence yearly. Two other sokemen, archbishop Stigand's men, hold and held half a virgate and could assign (*dare*) and sell.

¹ In Little Mundon.

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In ORDWELLE [Horwell(bury)]¹ Osbern holds of the Bishop half a hide. There is land for 1 plough, and this is there, and 2 villeins. It has always been worth 15 shillings. This land 3 of archbishop Stigand's men held and could sell.

In RETH [Reed] Osbern holds of the Bishop 1 hide. There is land for 3 ploughs. On the demesne is 1, and another could be added. Six bordars there have 1 plough between them. It is worth 40 shillings; when received it was 60 shillings; and 60 shillings T.R.E. This land Eddeva the maiden (*puella*) held—so the hundred court testifies. She was archbishop Stigand's 'man' (*homo*) and could sell.

In RADEWELLE [Radwell] Adam holds under the Bishop 4 hides. There is land for 7 ploughs. On the demesne are 2, and there could be 2 more. There 8 villeins with 4 bordars have 3 ploughs between them. There are 4 serfs, and 1 mill worth 8 shillings. Meadow is there sufficient for a half-plough team, and pasture sufficient for the live stock. It is worth 100 shillings; when received 40 shillings; T.R.E. 10 pounds. This manor Alnod, a man of archbishop Stigand's, held and could sell.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In BERLAI [Barley] Adam holds of the Bishop 1½ hides. There is land for 2 ploughs. One plough is there, and there could be another. There are 3 villeins and 2 serfs. It is worth 20 shillings; when received it was worth 12 shillings; T.R.E. 40 shillings. This land he held of archbishop Stigand and could sell.²

In HASLEHANGRA [] Adam holds of the Bishop ½ hide. There is land for a half-plough. It is worth 4 shillings; when received 2 shillings; T.R.E. 10 shillings. This land Leflet held of archbishop Stigand and could sell.

¹ This manor was held as a quarter of a knight's fee in 1303 and 1428 (*Feudal Aids*, ii. 433, 447), but has not been located. But its tenure in the fifteenth century by the Paston family enables us to do this, for it is frequently mentioned in the *Paston Letters*, and in one of them it is spoken of by William Paston (1480) as 'my Maner of Hartwelbury, in Kelsall, besides Royston.' Gairdner's ed. *Paston Letters*, iii. 275 (J.H.R.).

² So in the text. But Domesday has probably omitted the name of the Archbishop's 'man' here, as he was almost certainly not this Adam (J.H.R.).

Osbern holds of the Bishop BOCHELANDE [Buckland]. It is assessed at 3 hides and 3 virgates. There is land for 6 ploughs. On the demesne are 2, and a third could be added. A priest there and 8 villeins and 6 bordars have 3 ploughs between them. There are 8 cottars and 4 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 40 swine, and from pasture and woodland 10 shillings (revenue). Altogether it is worth 6 pounds; when received 8 pounds; T.R.E. 10 pounds. Sait, a man of earl Lewin's, held this manor and could sell.

In ODENHOU [Hodenhoe³] Osbern holds of the Bishop 1 hide and a ½ virgate. There is land for 2 ploughs and a half-plough, and these are there, with 3 villeins and 6 bordars and 1 Frenchman. It is worth 40 shillings; when received 30 shillings; T.R.E. 60 shillings. This land 4 sokemen held. Three of these were archbishop Stigand's men and the fourth earl Algar's, and they could sell.

In TROCHINGE [Throcking] Osbern holds of the Bishop 12 acres. There is land for 1 ox (to plough). It has always been worth 2 shillings. Alvrice Scoua held it and could sell.

In ICHETONE [Layston⁴] Osbern holds of the Bishop 1 hide. There is land for 2½ ploughs. On the demesne is 1 (plough), and 2 villeins with 2 bordars have 1 plough between them, and a half-plough could be added. There are 1 cottar and 4 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, and woodland to feed 10 swine. It is worth 40 shillings; when received 30 shillings; T.R.E. 60 shillings. This land 4 sokemen held. One of these was a man of archbishop Stigand's, and 2 were king Edward's men and paid by custom 2 pence. The fourth was a man of earl Harold's. All these could sell their land.

IN THE HALF-HUNDRET OF HIZ [HITCHIN]

Ralf holds KAMINTONE [Kimpton] of the Bishop. It is assessed at 4 hides. There is land for 10 ploughs. On the demesne are 2, and there could be a third. There 2 Frenchmen and 12 villeins with 2 bordars have 7 ploughs between them. There are 3 cottars

³ In Buckland.

⁴ 'Ichetone' was a manor in Layston, which latter name does not occur in Domesday, being of later origin (J.H.R.).

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and 5 serfs. Meadow is there sufficient for 6 oxen, and woodland to feed 800 swine. There is a mill worth 8 shillings. Its whole value is and was 12 pounds; T.R.E. 15 pounds. This manor *Ælveva*,¹ mother of earl Morcar, held.

IN BRACHINGS [BRAUGHING] HUNDRET

In EIA [] Peter holds of the Bishop half a hide. There is land for a half-plough, but this is not there. There is a mill worth 3 shillings, and 200 eels (are received) from the weirs. Meadow is there sufficient for a half-plough team, and producing from hay 10 shillings. This land is worth 20 shillings; when received it was 10 shillings; T.R.E. 30 shillings. Suen, a man of earl Harold's, held it and could sell.

In TONRINCH [Thundridge] Hugh de Grentmaisnil holds 1 hide of the Bishop.² There is land for 4 ploughs. On the demesne is 1, and there could be a second. There 4 villeins and 3 bordars have 2 ploughs between them. There are 2 serfs, and 1 mill worth 5 shillings. Meadow is there for 4 []³ and woodland to feed 16 swine. This land is worth 30 shillings; when received 40 shillings; T.R.E. 100 shillings. Alnod held this manor of Stigand the archbishop and could sell.

VI. THE LAND OF THE BISHOP OF LISIEUX

IN DANEIS [DACORUM] HUNDRET

The bishop of Lisieux has in REDBORNE [Redbourn] 1 virgate of land. Wigot holds (it) of him. There is land for a half-plough, and this is there, with 1 bordar. It is worth 8 shillings; when received it was worth 2 shillings; T.R.E. 10 shillings. Alwin the huntsman, a man of earl Lewin, held it and could sell.

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VII. THE LAND OF ROBERT BISHOP OF CHESTER

IN DANAIS [DACORUM] HUNDRET

The bishop of Chester holds MIMMINE [Mimms]. It was assessed T.R.E. at 8 hides

¹ *Ælfgifu*, widow of *Ælfgar* of Mercia (J.H.R.).

² Adjacent to the great manor of Ware, which he held of the king (J.H.R.).

³ MS. apparently defective.

and 1 virgate; now at 8 hides. There is land for 13 ploughs. In the demesne are 4 hides, and 2 ploughs are on it, and a third could be added. There 17 villeins and 8 bordars have together 10 ploughs. There are 3 cottars and 1 serf. Pasture is there sufficient for the live stock, and woodland to feed 400 swine. Its value in all is and was 8 pounds; T.R.E. 10 pounds. This manor 3 thegns, queen Eddid's men, held, and they could sell. This manor does not belong to the bishopric, but was Rayner's, the father of bishop Robert.

IN ODESEI [ODSEY] HUNDRET

The Bishop himself holds BIGRAVE [Bygrave]. It is assessed at 5 hides. There is land for 12 ploughs. In the demesne are 2 hides, and there are 3 ploughs on it. A priest and 2 sokemen with 10 villeins and 9 bordars have 9 ploughs between them. There are 6 cottars and 7 serfs, and 1 mill worth 10 shillings. Its value in all is 10 pounds; when received 8 pounds; T.R.E. 12 pounds. This manor Lemar, a man of archbishop Stigand's, held and could sell; and 2 sokemen who are there held 3 virgates, but could not sell except by leave of the Archbishop.

In BRADEFELLA [Broadfield] the same Bishop holds 1 virgate of land. There is land for 3 oxen (to plough). One serf is there. It is and was worth 3 shillings; T.R.E. 5 shillings. Ledmær, a man of archbishop Stigand, held it and could sell.

IN BRADEWATRE [BROADWATER] HUNDRET

In WILGE [Welwyn] the same Bishop holds a $\frac{1}{2}$ hide. There is land for a half-plough. It has always been worth 3 shillings. This land belongs to (*jacet in*) Bigrave [Bygrave], a manor held by the same Bishop. Archbishop Stigand held it.

VIII. THE LAND OF THE ABBOT OF ELY

IN BRADEWATRE [BROADWATER] HUNDRET

The abbot of Ely holds HETFELLE [Hatfield Episcopi]. It is assessed at 40 hides. There is land for 30 ploughs. In the demesne are 20 hides, and there are 2 ploughs on it, and there could be 3 more. A priest there and 18 villeins and 18 bordars have 20 ploughs between them, and there could be 5 more. There are 12 cottars and 6 serfs, and 4 mills worth 47 shillings and 4 pence. Meadow is there sufficient for 10 plough

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teams, pasture sufficient for the live stock, woodland to feed 2,000 swine; and 10 shillings are the dues from wood and pasture. Altogether its value is and was 25 pounds; T.R.E. 30 pounds. This manor belonged and still belongs to the demesne (*jacuit et jacet in dominio*) of the church of Ely.

IN ODESEI [ODSEY] HUNDRET

The Abbot himself holds CHELESELLE [Kellshall]. It is assessed at 5 hides. There is land for 10 ploughs. In the demesne are 2 hides, and there are 3 ploughs on it, and there could be a fourth. There 12 villeins with 9 bordars have 6 ploughs between them. There are 7 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock. Its total value has always been 10 pounds. This manor belonged and belongs to the demesne (*jacuit et jacet in dominio*) of the church of Ely.

IN EDWINESTREU [EDWINSTREE] HUNDRET

The Abbot himself holds HADAM [Haddenham]. It is assessed at 4 hides. There is land for 13 ploughs. In the demesne are 2 hides, and on it are 3 ploughs, and there could be a fourth. There 15 villeins have 8 ploughs between them, and there could be a ninth. There are 15 bordars and 7 serfs. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 100 swine. Its total value is and was 15 pounds; T.R.E. 12 pounds. This manor belonged and belongs to the demesne (*jacuit et jacet in dominio*) of the church of Ely, and it belonged to it on the day when king Edward was living and died, as the whole shire-moot (*scira*) testifies.

IX. THE LAND OF THE ABBEY OF WESTMINSTER

IN DANAIS [DACORUM] HUNDRET

The abbot of St. Peter of Westminster (*Westmonast' Sancti Petri*) holds WATAMESTEDE [Wheatthamstead]. It is assessed at 10 hides. There is land for 10 ploughs. In the demesne are 5 hides. There are 3 ploughs on it, and there could be 2 more. A priest and (*cum*) 15 villeins have 5 ploughs between them; and there are 12 bordars, and 9 cottars, and 4 mills worth 40 shillings. Meadow is there sufficient for 4 plough teams, pasture sufficient for the live stock, woodland to feed 400 swine. Its total value is and was 16 pounds; T.R.E. 30 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Peter.

In TITEBERSTH [Titeberst¹] the same Abbot holds 1 hide. There is land for a half-plough, woodland to feed 40 swine. It is and was worth 10 shillings; T.R.E. 13 shillings. In this same vill Geoffrey de Magneville holds 3 virgates of the Abbot. There is land for a half-plough, woodland to feed 12 swine. It is and was worth 6 shillings and 8 pence; T.R.E. 10 shillings.

In ELDEHAM [Aldenham] the same Abbot holds 9 hides. There is land for 6 ploughs. In the demesne are 4 hides, and there is 1 plough on it, and there could be another. A reeve (*prepositus*) and (*cum*) 8 villeins have 3 ploughs between them, and there could be a fourth. There are 5 cottars and 2 serfs, and 1 mill worth 5 shillings. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, and woodland to feed 800 swine. Its value is and was 3 pounds; T.R.E. 8 pounds. This manor belonged and belongs to the demesne (*jacuit et jacet in dominio*) of the church of St. Peter of Westminster.

IN BRADEWATRE [BROADWATER] HUNDRET

The Abbot himself holds STIGENACE [Stevenage]. It is assessed at 8 hides. There is land for 10 ploughs. In the demesne are 4 hides, and on it are 2 ploughs. There 16 villeins with 8 bordars have 7 ploughs between them, and there could be an eighth. There are 4 serfs, and there is pasture sufficient for the live stock, and woodland to feed 50 swine. Its whole value is and was 12 pounds; T.R.E. 13 pounds. This manor belonged and belongs to the demesne (*jacuit et jacet in dominio*) of the church of St. Peter.

The Abbot himself holds THEUNGE [Tewin]. It is assessed at 2½ hides. There is land for 1 plough, and this is there on the demesne, with 2 cottars. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 50 swine. This land is a 'hardwich' of Stigenace [Stevenage], and it is appraised with it.

In DACEWORDE [Datchworth] the same Abbot holds 3 hides and 1 virgate. There is land for 3 ploughs. In the demesne are 2 hides, and there is 1 plough on it; and 6 villeins have 2 ploughs. There are 2 cottars. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 50 swine. Its value is and was

¹ See p. 308, note ⁴ above.

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40 shillings; T.R.E. 60 shillings. This manor belonged and belongs to the demesne of the church of St. Peter.

In WATONE [Watton] the same Abbot holds 1 hide. There is land for 2 ploughs. On the demesne is 1, and 4 bordars have 1 between them. There are 2 cottars, and 1 mill worth 2 shillings. Pasture is there sufficient for the live stock, woodland to feed 100 swine. Its value is and was 10 shillings; T.R.E. 20 shillings. This land belonged to the church of S. Peter (*jacuit in ecclesia S. Petri*).

In ALETE [Ayot St. Laurence] Geoffrey¹ holds of the Abbot 2½ hides. There is land for 7 ploughs. On the demesne is 1, and there could be another. There 13 villeins with 4 bordars have 5 ploughs between them. There are 5 cottars, and 1 mill worth 6 shillings and 8 pence. Meadow is there sufficient for 1 plough team, woodland to feed 24 swine. Its total value is 60 shillings; when received 20 shillings; T.R.E. 100 shillings. This manor Alwin, a thegn of king Edward's, held and could sell. In regard to (*De*) this manor the Abbot claims (*revocat*) that king William conceded it to him.

IN ODESEI [ODSEY] HUNDRET

The Abbot himself holds ESCEWELLE [Ashwell]. It is assessed at 6 hides. There is

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land for 12 ploughs. In the demesne are 2½ hides, and there are 2 ploughs on it. A priest with 16 villeins and 9 bordars have together 5 ploughs. There can be (employed) there 5 others. There are 14 burgesses and 9 cottars. From toll and other dues of the borough (*arise*) 49 shillings and 4 pence. There are 4 serfs, and 2 mills worth 14 shillings. Meadow is there sufficient for 6 plough teams, pasture sufficient for the live stock, woodland to feed 100 swine. Its total value is and was 20 pounds; T.R.E. 22 pounds. Of this land Peter the sheriff holds of the Abbot a ½ hide; and Geoffrey de Manneville 1 virgate, and 1 mill worth 10 shillings. This manor belonged and belongs to the demesne (*jacuit et jacet in dominio*) of the church of St. Peter of Westminster.

¹ Geoffrey de Mandeville, for the manor is found in possession of his heirs the Bohuns (J.H.R.).

X. THE LAND OF THE CHURCH OF ST. ALBAN

IN ALBANESTOU [CASHIO] HUNDRET

The abbot of St. Albans holds HENAMMESTEDA [Hemel Hempstead²]. It is assessed at 20 hides. There is land for 20 ploughs. In the demesne are 6 hides, and on it are 3 ploughs, and there could be a fourth. There 26 villeins with 4 Frenchmen have 13 ploughs between them, and there could be 3 more. There are 3 bordars and 1 serf, and 2 mills worth 20 shillings. Meadow is there sufficient for 3 plough teams and paying 13 shillings (besides). Pasture is there sufficient for the live stock, woodland to feed 1,000 swine. Its total value is and was 22 pounds and 10 shillings; T.R.E. 25 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the abbey of St. Alban.

The Abbot himself holds SCENLAI [Shenley]. It is assessed at 6 hides. There is land for 8 ploughs. In the demesne are 2 hides, and there are 2 ploughs on it; and there 11 villeins with 1 Frenchman have 5 ploughs, and there could be a sixth. There are 3 cottars. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 400 swine. Its total value is and was 12 pounds; when received 6 pounds; and 6 pounds also T.R.E. This manor is and was part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban.

The Abbot himself holds SANDRIGE [Sandridge]. It is assessed at 10 hides. There is land for 13 ploughs. In the demesne are 3 hides, and on it are 2 ploughs, and there could be a third. There 26 villeins have 10 ploughs between them. There are 2 cottars and 1 serf, and 1 mill worth 10 shillings. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 300 swine. Its total value is 18 pounds; when received it was 12 pounds; and 12 also T.R.E. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban.

The Abbot himself holds WALDENE [St. Paul's Walden]. It is assessed at 10 hides. There is land for 14 ploughs. In the demesne are 3 hides, and on it are 2 ploughs, and there could be a third. There 17 villeins with 1 Frenchman have 10 ploughs between them, and there could be one more. There are

² Now in Dacorum Hundred.

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9 bordars and 3 serfs, and 2 mills worth 15 shillings. Meadow is there sufficient for 1 plough team, and pasture sufficient for the live stock, and wood sufficient for the fences and the homesteads. The total value is and was 18 pounds and 10 shillings; T.R.E. 20 pounds and 10 shillings. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban.

The vill of St. Albans is assessed at 10 hides. There is land for 16 ploughs. In the demesne are 3 hides, and on it are 2 ploughs, and there could be a third. There 4 Frenchmen and 16 villeins with 13 bordars have 13 ploughs between them. There are 46 burgesses. The product of the toll and of the other revenues of the vill is 11 pounds and 14 shillings yearly. There are 3 mills worth 40 shillings. Meadow is there sufficient for 2 plough teams, woodland to feed 1,000 swine and producing 7 shillings revenue. Its total value is 20 pounds; when received it was 12 pounds; T.R.E. 24 pounds. In this same vill there are 12 cottars besides. There is a 'park' for beasts of the chase (*bestiarum silvaticarum*) and there is a fish-stew (*vivarium piscium*). The forementioned burgesses have half a hide.

IN BRADEWATRE [BROADWATER] HUNDRET

CODICOTE [Codicot¹] and OXEW'ICHE [Oxhey]² were 2 manors T.R.E., and now they are 1, which is assessed at 8 hides. There is land for 12 ploughs. In the demesne there are 3 hides and 1 virgate, and on it are 4 ploughs. There 16 villeins have between them 7 ploughs, and there could be an eighth. There are 1 Frenchman and 3 cottars and 4 serfs, and 2 mills worth 12 shillings. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 200 swine. Its total value is 6 pounds; when received 5 pounds; T.R.E. it was 12 pounds. These 2 manors belonged to the church (*jacuerunt in ecclesia*) of St. Alban T.R.E. Alwin (of) Gotone held there 3 hides under the Abbot and could not alienate them from the church. Fifteen acres of this land were encroached on by the count of Mortain's men to the wrong of (*super*) the Abbot—so the men of the hundred (court) testify.

The Abbot himself holds NORTONE [Norton]. It is assessed at 4 hides. There is land for 10 ploughs. In the demesne are 2 hides,

and on it are 3 ploughs. A priest and a Frenchman and 14 villeins have 7 ploughs between them. There are 5 cottars and 1 serf, and 2 mills worth 16 shillings. Meadow is there sufficient for 2 plough teams, and pasture for the live stock. Its total value is and was 16 pounds; T.R.E. it was 17 pounds. This St. Alban held and holds in demesne.

The Abbot himself holds ESCEPEHALE [Sheephall] as 3 hides. There is land for 5 ploughs. In the demesne are 1½ hides, and on it is 1 plough, and there could be another. There 8 villeins have 3 ploughs between them. There are 2 cottars and 1 serf. Meadow is there sufficient for 1 plough team, and pasture sufficient for the live stock, woodland to feed 10 swine. Its total value is 4 pounds; when received it was 3 pounds; T.R.E. it was 4 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban.

IN DANAIS [DACORUM] HUNDRET

The Abbot himself holds LANGELEI [Abbot's Langley]. It was assessed at 5½ hides T.R.E., and now at 3 hides. There is land for 15 ploughs. In the demesne are 2½ hides. There are 4 ploughs on it, and there could be a fifth. A priest there and a Frenchman with 10 villeins have 10 ploughs between them. There are 5 bordars and 2 serfs, and 2 mills worth 20 shillings. Meadow is there sufficient for 5 plough teams, pasture sufficient for the live stock, woodland to feed 300 swine. Of this land a knight (*miles*) holds a half-hide. Its total value is 10 pounds; when received it was 12; T.R.E. 15 pounds. This manor belonged and belongs to the church (*jacuit et jacet in ecclesia*) of St. Alban. From this manor Herbert fitz Ivo³ took and occupied 1 hide what with wood and field (*inter boscum et planum*) in the bishop of Bayeux's time. This hide⁴ belonged to the church of St. Alban on the day when king Edward was alive and died. It is now held by the count of Mortain.

In REDBORNE [Redbourn] the same Abbot holds 7 hides and 1 virgate. There is land for 16 ploughs. In the demesne are 3 hides and 1 virgate, and 4 ploughs are on it. There 16 villeins have 12 ploughs between them. There is 1 serf, and there are 2 mills worth

³ He was an under-tenant of the bishop of Bayeux at several places in Bedfordshire and Kent, and had erected an obnoxious mill at the entrance of Dover harbour (J.H.R.).

⁴ See Introduction, p. 291.

¹ Now is in Cashio Hundred.

² In Watford.

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26 shillings. Meadow is there sufficient for 1 plough team and a half-plough team, pasture sufficient for the live stock, and woodland to feed 300 swine. Its total value is 30 pounds; when received it was 15 pounds; T.R.E. 16 pounds. This manor belonged and belongs to the church of St. Alban. Archbishop Stigand held it at the time king Edward died, but he could not alienate it from that church.

The Abbot himself holds **ABSA** [Apsbury in St. Peter's].¹ It was assessed at 3 hides; it is now assessed at half a hide. There is land for 4 ploughs. In the demesne are 2½ hides, and there are 2 ploughs on it; and 2 villeins with 4 bordars have 2 ploughs between them. There are 2 serfs, and 1 mill worth 10 shillings. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 300 swine. This manor is worth 60 shillings; when received 20 shillings; T.R.E. 4 pounds. This manor Godric, a man of archbishop Stigand's, held. He could not alienate it from St. Alban's church.

In **WENRIGE** [Windrige in St. Michael's] Geoffrey de Bech holds of the Abbot 1½ hides. There is land for 2 ploughs. On the demesne is one, and 5 villeins with 2 bordars have 1 between them. Pasture is there sufficient for the live stock, and woodland to feed 300 swine. It is worth 40 shillings; when received []²; T.R.E. 50 shillings. This land Osbern a monk held, and Goding his man. They could not alienate it from the church—so the hundred (court) testifies.

In **TITEBERSTH** [Titeberst³] Geoffrey holds of the Abbot half a hide. It has always been worth 6 shillings. A sokeman held it T.R.E., one of the men of the abbot of St. Albans. He could not sell to alienate it from (*extra*) that church.

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In **REDBORNE** [Redbourn] Amelger holds of the Abbot 3½ virgates. There is land for 2 ploughs, and these are there, with 2 villeins and 2 cottars. There is woodland to feed 200 swine. It is worth 30 shillings; when

received 20 shillings; T.R.E. 40 shillings. St. Alban held and holds this land.

IN ALBANESTOU [CASHIO] HUNDRET

The Abbot himself holds **PRICHEMARE-WORDE** [Rickmansworth]. It is assessed at 15 hides. There is land for 20 ploughs. In the demesne are 5 hides, and on it are 3 ploughs, and there could be 2 more. There 4 Frenchmen and 22 villeins with 9 bordars have 14 ploughs between them, and there could be 1 plough more. There are 5 cottars and 5 serfs, and 1 mill worth 5 shillings and 4 pence. Meadow is there sufficient for 4 plough teams, there is revenue from fishes 4 shillings, pasture is there sufficient for the live stock, woodland to feed 1,200 swine. In all the value is 20 pounds and 10 shillings; when received 12 pounds; T.R.E. 20 pounds. This manor St. Alban held and holds in demesne.

The Abbot himself holds **CAISSOU** [Cassio-bury]. It is assessed at 20 hides. Of these the Abbot holds 19. There is land for 22 ploughs. In the demesne are 6 hides, and on it are 5 ploughs, and there could be a sixth. There 3 Frenchmen and 36 villeins with 8 bordars hold 15 ploughs between them, and there could be 1 more. There are 3 bordars besides and 2 serfs, and 4 mills worth 26 shillings and 8 pence. Meadow is there sufficient for 22 plough teams, pasture sufficient for the live stock, and woodland to feed 1,000 swine. In all it is worth 28 pounds; when received it was worth 24; T.R.E. 30 pounds. This manor St. Alban held and holds in demesne.

In **ELDEHAM** [Aldenham] Geoffrey de Bech holds under the Abbot 1 hide. There is land for 1 plough, but the plough is wanting. There are 2 cottars, and there is woodland to feed 100 swine. Its value is and was 12 shillings; T.R.E. 20 shillings. This land was held by Blache, a man of St. Alban. He could not sell.

IN ODESEI [ODSEY] HUNDRET

The Abbot himself holds **NEUHAM** [Newnham]. It is assessed at 3 hides and 3 virgates. There is land for 8 ploughs. In the demesne are 1 hide and 3 virgates, and there are 2 ploughs on it. There 10 villeins and (*cum*) 8 bordars have 4 ploughs between them, and there could be (employed) 2 more. There are 3 cottars. Meadow is there sufficient for 1 plough team, pasture sufficient for

¹ Corruptly 'Napsbury' (cf. Naldwick, which = Aldwick, now in Tring, once in Masworth). It is now represented by a farm just east of Park Street Junction.

² MS. defective.

³ See p. 308, note 4.

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the live stock. In all its value is and was 9 pounds; T.R.E. 10 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban.

IN THE HALF-HUNDRET OF HIZ [HITCHIN]

In HEGÆSTANESTONE [Hexton] the same Abbot holds 8 hides and 3 virgates. There is land for 12 ploughs. In the demesne are 4 hides, and 4 ploughs are on it, and there could be a fifth. There 13 villeins and (*cum*) 3 bordars have 3 ploughs between them, and there could be 4 more. There are 3 cottars and 4 serfs, and Geoffrey de Bech holds there a half-hide under the Abbot. There are 2 mills worth (*de*) 3 shillings and 4 pence. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock. In all its value is 17 pounds and 10 shillings; when received it was 12 pounds; T.R.E. 16 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban. Of this land 1 Englishman holds 3 hides under the Abbot.

The Abbot himself holds BENEDIS [Bendish in St. Paul's Walden]. It is assessed at 1 hide. There is land for 2 ploughs, and the ploughs are there, and (*cum*) 4 villeins who hold this land. There are 2 cottars. Wood is there (sufficient) for the fences, meadow for a half-plough team, pasture for the live stock of the vill. It is and was worth 50 shillings; T.R.E. 40 shillings. This land was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Alban.

XI. THE LAND OF SAINT BENEDICT OF RAMESY¹

IN ODESEI [ODSEY] HUNDRET

The abbot of RAMESY [Ramsey] holds in FURREUUELDE [Therfield] 10 hides and 1 virgate. There is land for 20 ploughs. In the demesne are 3½ hides. On it are 2 ploughs and a half-plough, and there could be another half-plough. There 27 villeins and (*cum*) a priest and 1 Frenchman have 11 ploughs between them, and there could be 6 more. There are 14 cottars and 4 serfs. Pasture is there sufficient for the live stock, woodland to feed 20 swine. In all the value is 11 pounds; when received it was 10 pounds; T.R.E. 12 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Benedict.

¹ The abbot of Ramsey is omitted in the list on fo. 132 of the MS. See p. 301 above, and Introduction, p. 299.

XII. THE LAND OF THE CHURCH OF CETRIZ [CHATTERIS]

IN EDW(I)NESTREU [EDWINSTREE] HUNDRET

The abess of CETRIZ [Chatteris] holds in BERLAI [Barley] 3½ hides as 1 manor.² There is land for 4 ploughs. In the demesne is 1 hide and a half (and on it is one plough),³ and a half-plough could be added. There 8 freemen (*liberi homines*) have 2 ploughs and a half-plough (between them). There are 6 bordars and 2 serfs. Woodland is there to feed 20 swine. In all the value is and was 70 shillings; T.R.E. 4 pounds. This manor was and is part of the demesne (*jacuit et jacet in dominio*) of the church of St. Mary of Cetriz.

XIII. THE LAND OF ST. PAUL OF LONDON

IN DANAIS [DACORUM] HUNDRET

The canons of London hold CANESWORDE [Kensworth]. It is assessed at 10 hides. There is land for 10 ploughs. In the demesne are 5 hides, and on it there are 2 ploughs, and there could be 3 more. There 8 villeins and (*cum*) 3 bordars have 2 ploughs, and there could be 3 more. There are 3 serfs. Pasture is there sufficient for the live stock, and woodland to feed 100 swine, and from the revenue of the woodland (*de redditu silve*) is 2 shillings. In all its value is 70 shillings; when received 100 shillings; and 100 shillings also T.R.E. This manor Lewin Cilt⁴ held of king Edward.

The Canons themselves hold CADENDONE [Caddington]. It is assessed at 10 hides. There is land for 10 ploughs. In the demesne are 4 hides, and there is on it 1 plough, and there could be 3 more. There 22 villeins have 6 ploughs between them. There are 5 bordars and 2 serfs. Pasture is there sufficient for the live stock, woodland to feed 100 swine and (worth) 2 shillings (besides). In all the value is 110 shillings; when received it was 6 pounds; and 6 pounds also T.R.E. This manor Lewin⁴ held of king Edward.

IN ODESEI [ODSEY] HUNDRET

The Canons themselves hold ERDELEI [Yardley]. It is assessed at 6 hides. There is land

² This was the manor afterwards known as Mincing (*i.e.* the nuns') Bury or (by corruption) Mimbling Bury (J.H.R.).

³ Text defective.

⁴ See Introduction, p. 281.

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for 10 ploughs. In the demesne are 3 hides, and 2 ploughs are on it, and there could be a third. There 12 villeins have 7 ploughs. There are 6 bordars and 2 cottars and 4 serfs. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock, and woodland to feed 200 swine. In all the value is and was 7 pounds; T.R.E. 10 pounds. This manor belonged and belongs (*jacuit et jacet in*) to the church of St. Paul.

In LUFENELLE [Luffenhall] the Canons hold 2 hides. There is land for 2 ploughs. In the demesne is 1 hide and a half, and on it is 1 plough; and 1 villein and (*cum*) 2 bordars have a half-plough (between them), and there could be another half-plough. There is 1 serf. Pasture is there sufficient for the live stock, wood sufficient for the fences. It is and was worth 20 shillings; T.R.E. 40 shillings. This manor St. Paul held T.R.E.

The Canons themselves hold SANDONE [Sandon]. It is assessed at 10 hides. There is land for 20 ploughs. In the demesne are 5 hides, and on it are 6 ploughs. A priest there and (*cum*) 24 villeins have 12 ploughs between them, and there could be another.¹ There are 12 bordars and 16 cottars and 11 serfs. Meadow is there for 2 plough teams, pasture sufficient for the live stock, woodland to feed 150 swine. In all the value is and was 22 pounds; T.R.E. 20 pounds. This manor belongs and belonged (*jacuit et jacet in*) to the church of St. Paul.

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XIV. THE LAND OF THE CANONS OF WALTHAM

IN HERTFORD HUNDRET

The canons of the Holy Cross of Waltham hold WERMELAI [Wormley]. It is assessed at 5 hides. There is land for 4 ploughs. In the demesne are 3 hides 2 virgates and a half. There is 1 plough on it, and there could be another. There 5 villeins have 2 ploughs between them. There are 4 bordars and 3 cottars and 2 serfs. Meadow is there sufficient for 4 plough teams, pasture sufficient for the live stock, and woodland to feed 300 swine. Its total value is and was 4 pounds; T.R.E. 100 shillings. This manor belonged and belongs (*jacuit et jacet in*) to the church of the Holy Cross of Waltham.

¹ It should be observed that the figures do not here tally. The details only amount to 19 as against the estimated 20 (J.H.R.).

The Canons themselves hold BRICHENDONE [Brickendon(bury)]. It is assessed at 5 hides. There is land for 8 ploughs. In the demesne are 3½ hides, and on it are 2 ploughs, and there could be a third. There 9 villeins have 4 ploughs between them, and there could be a fifth. There are 9 bordars and 24 cottars and 2 serfs, and 1 mill worth (*de*) 8 shillings. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock of the vill and (worth) 2 shillings (besides), woodland to feed 200 swine. In all its value is and was 100 shillings; T.R.E. 8 pounds. This manor belonged and belongs (*jacuit et jacet in*) to the church of the Holy Cross of Waltham.

XV. THE LAND OF THE COUNT OF MORTAIN

IN TREUNG [TRING]² HUNDRET

The count of Mortain holds BERCHEHAMSTEDE [Gt. Berkhamstead]. It is assessed at 13 hides. There is land for 26 ploughs. In the demesne are 6 hides, and on it are 3 ploughs, and there could be other 3. A priest there and (*cum*) 14 villeins and 15 bordars have 12 ploughs, and there could be 8 ploughs more. There 6 serfs and a certain ditcher (*fossarius*) have a half-hide, and Rannulf, a serjeant of the Count (*serviens comitis*), 1 virgate. In the borough (*burbio*) of this vill are 52 burghesses³ who render from toll 4 pounds and have half a hide, and 2 mills worth (*de*) 20 shillings. There are 2 arpents of vineyard. Meadow is there sufficient for 8 plough teams, pasture for the live stock of the vill, and woodland to feed 1,000 swine and (worth) 5 shillings (besides). In all the value is 16 pounds; when received it was 20 pounds; T.R.E. 24 pounds. This manor Edmar, a thegn of earl Harold,⁴ held.

Ranulf holds of the Count SCENLAI [Shenley]. It is assessed at 1 hide. There is land for 2 ploughs. One is there, and there could be another. There are 2 bordars. Pasture is there sufficient for the live stock, and woodland worth 100 shillings (*silva c sol'*).⁵ Altogether it is worth 5 shillings;⁶ when received 3 pounds; T.R.E. 4 pounds. This land 2

² Now part of Dacorum Hundred.

³ See Introduction, p. 280.

⁴ See Introduction, p. 281.

⁵ This is probably a slip of the scribe for *silva c pore'* (as at Wigginton below), i.e. 'woodland to feed 100 swine' (J.H.R.).

⁶ So the MS.; ? pounds.

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sokemen held. One was a house-carl of king Edward's, the other a man of earl Lewin, and they could sell.

The Count himself holds ALDEBERIE [Aldbury]. It is assessed at 10 hides. There is land for 7 ploughs. In the demesne are 6 hides, and on it are 3 ploughs; and 8 villeins and (*cum*) 1 sokeman and 1 Frenchman have 4 ploughs. There is 1 bordar and there are 4 serfs. Meadow is there of half a hide,¹ woodland to feed 500 swine. Its total value is 110 shillings; when received it was 8 pounds; and 8 pounds also T.R.E. This manor Alwin, a thegn of king Edward, held.

In PENTLAI [Pendley] the Count himself holds 2 hides. There is land for 2 ploughs. There 1 villein and (*cum*) 6 bordars have 1 plough, and there could be another. Meadow is there sufficient for a plough team and a half-plough team. It is worth 30 shillings; when received it was 20 shillings; T.R.E. 40 shillings. This land Eddeva the nun held of Ingelric and could not assign it (*dare*). These 2 hides are part of the 7 hides which the count of Mortain took from (*sumpsit in*) Treung [Tring].

Humfrey holds of the Count WIGENTONE [Wigginton]. It is assessed at $7\frac{1}{2}$ hides and $\frac{1}{3}$ of a half-hide. There is land for 5 ploughs. On the demesne is 1, and there could be another. There 5 villeins have 2 ploughs, and there could be a third. There are 6 cottars and 1 serf, and 1 mill worth (*de*) 5 shillings. Meadow is there sufficient for 1 plough team, woodland to feed 100 swine. Its total value is 4 pounds; when received it was 40 shillings; T.R.E. 6 pounds. Of this manor $3\frac{1}{2}$ hides were held by Brictric, one of queen Eddid's men; and Goduin, one of Engelric's men, held 3 hides and $\frac{1}{3}$ of a half-hide. They could not assign (*dare*) or sell their land to separate it from (*extra*) Tredung [Tring]. These are (part) of the 7 hides which the count of Mortain took out of (*de*) Treung [Tring]. And Leuric, Osulf's man, held a half-hide and could sell. The other half-hide belonged to (*jacuit in*) Berchamstede.

Fulcold holds BUBLECOTE [Gubblecote] of the Count. It is assessed at 1 hide and a half. There is land for 1 plough and a half-plough.

¹ *Pratum dim' hid'* in the text. The meadow formula is so regular that this must be another slip of the Domesday scribe, who has written *hid'* for *car'*. The meaning therefore must be 'meadow for half a plough team' (J.H.R.).

On the demesne is 1 plough, and 3 villeins have a half-plough between them. There are 2 bordars, and 1 mill worth (*de*) 12 shillings and 4 pence. Meadow is there sufficient for 2 plough teams. Its value is and was 30 shillings; T.R.E. 40 shillings. This land Eddeva held of Ingelric. She could not put it (*mittere*) out of Tredung [Tring]. This land is (part) of the 7 hides which the count of Mortain took out of (*de*) Tredung [Tring].

In MISSEWELLE [Miswell in Tring] Ralf holds of the Count a half-hide. There is land for a half-plough,² and meadow sufficient for a half-plough team. It is and was worth 4 shillings; T.R.E. 10 shillings. This land Wiga, a man of Osulf son of Frane, held, and he could sell.

Lewin holds of the Count BURE [Boorscroft farm]. It is assessed at 1 hide and a half. There is land for 1 plough, and the plough is there on the demesne, and 4 cottars. Meadow is there sufficient for a half-plough team. It is worth 20 shillings and 9 pence; when received it was 10 shillings; T.R.E. 20 shillings and 9 pence. This land the same Lewin held of king Edward and could sell. He holds it now of the Count 'at ferm' (*ad firmam*).³

In DANESLAI [Dunsley in Tring] a widow holds of the Count $\frac{1}{3}$ part of a half-hide. There is land for 1 ox (to plough). It has always been worth 12 pence. This land Ingelric held, being part of the land of 7 hides of Tredung [Tring] which the Count took (therefrom).

The Count himself holds HAMELAMESTEDE [Hemel Hempstead]. It is assessed at 10 hides. There is land for 30 ploughs. In the demesne are 3 hides, and on it are 4 ploughs, and there could be 2 more. There 2 Frenchmen and (*cum*) 13 bordars have 20 ploughs (between them), and there could be 4 more ploughs. There are 8 serfs, and 4 mills worth 37 shillings and 4 pence, and the yield of eels is 300 less 25. Meadow is there sufficient for 4 plough teams, pasture sufficient for the live stock and (worth) 2 shillings (besides), woodland to feed 1,200 swine. In all its value is 22 pounds; when received it was 25 pounds; and 25 also T.R.E. This manor 2 brothers held; they were earl Lewin's men.

² The record omits to state whether the oxen were there (J.H.R.).

³ *i.e.* as a rent-paying tenant.

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Ralf¹ holds LANGELEI [King's Langley] of the Count. It is assessed at 1 hide and a half. There is land for 16 ploughs. On the demesne is no plough, but there could be 2. There 1 Frenchman and (*cum*) 4 villeins and 5 bordars have 2 ploughs between them, and there could be 12 more. There are 2 mills worth 16 shillings, and 2 serfs. Meadow is there sufficient for 3 plough teams, pasture sufficient for the live stock, woodland to feed 240 swine. Its total value is 40 shillings; when received it was 4 pounds; T.R.E. 8 pounds. This manor two of earl Lewin's men held, Thuri and Seric.

Humphrey holds of the Count GATESDENE [Little Gaddesden]. It is assessed at 5 hides. There is land for 3 ploughs. On the demesne is 1, and 5 villeins with 2 bordars have 2 ploughs. There is 1 serf. Pasture is there sufficient for the live stock, woodland to feed 50 swine. In all its value is 40 shillings. When received it was 60 shillings; T.R.E. 4 pounds. This manor Edmer Attile held. It was a 'berewiche' of (*in*) Berchamstede.²

In REDBORNE [Redbourn] Rannulf holds of the Count half a hide. There is land for 1 plough, but there is no plough. There are 2 bordars only. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock. It is worth 17 shillings and 4 pence; when received it was 20 shillings; T.R.E. 40 shillings. Siward, a sokeman of king Edward's, held it and could sell.

XVI. THE LAND OF COUNT ALAN

IN BRADEWATRE [BROADWATER] HUNDRET

Count Alan holds in WATONE [Watton] 1 hide and a half, and Goduin holds of him. There is land for 4 ploughs. On the demesne there could be 2. There 3 bordars and 2 cottars have 2 ploughs. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock. It is and was worth 20 shillings; T.R.E. 30 shillings. This land Goduin held of the church of St. Peter but could not sell, and after his death it ought to have reverted to

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that church, as the hundred (court) testifies.

¹ This under-tenant of the Count was succeeded here as in Northamptonshire by the family of Chenduit, which, indeed, was probably his own name. From it this manor was sometimes styled Langley Cheynduht, and the name is preserved there in Shendish (J.H.R.).

² i.e. a dependency of that manor. See Introduction, p. 280.

But his wife put herself and this land by force (*vertit se per vim*) under Eddeva the fair, and was in possession on the day when king Edward was living and died. From this land 19 acres were taken after the coming of king William, which now Anschitill de Ros³ holds under the Archbishop. And yet count Alan discharges the King's geld due from them.

The Count himself holds MUNDENE [Munden]. It was assessed at 7 hides and half a virgate T.R.E. There is land for 14 ploughs. In the demesne are 4 hides and 1 virgate, and on it are 4 ploughs. There 16 villeins and 6 bordars have 10 ploughs. There is 1 cottar, and there are 2 serfs, and a mill worth 10 shillings. Woodland is there to feed 150 swine. And a second piece of woodland (*altera silva*) on which 200 swine might feed Roger de Mucelgros took away from this manor after earl Ralf's forfeiture (*forisfecit*)⁴—so the whole shire-moot (*scyra*) testifies. The value of this manor is altogether 16 pounds; when received it was 12; T.R.E. 16 pounds. This manor Eddeva the fair held.

IN ODESEI [ODSEY] HUNDRET

In CLADHELE [Clothall] Leuiet holds of the Count 1 virgate. There is land for 1 plough, and the plough is there. It has always been worth 20 shillings. It was held by Osgot, one of Eddeva's men, and he could sell. It is now attached to (*jacet in*) Mundene, to which it did not belong T.R.E.

In WALLINGTON [Wallington] Wimund holds of the Count 2 hides less 10 acres. There is land for 2 ploughs. One plough is there, and there could be another. There are 1 villein, 2 cottars and 2 serfs. Pasture is there sufficient for the live stock. It is worth 30 shillings; when received it was worth 10; T.R.E. worth 60 shillings. This land 2 sokemen, Eddeva's men, held and could sell.

In RETE [Reed] Hard(win)⁵ holds of the Count 1 hide. There is land for 3 ploughs. One is there, and there could be 2 others. There is 1 villein, and wood sufficient for the fences. It is worth 20 shillings; when received 10 shillings; T.R.E. 60 shillings. This land Leuing a priest, one of Eddeva's men, held and could sell.

In RETTH [Reed] Alward holds of the

³ See p. 305, note 1 above.

⁴ See Introduction, p. 296.

⁵ This was Hardwin 'de Scalers,' for whom see p. 338 below (J.H.R.).

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Count 1 hide. There is land for 3 ploughs. One plough is there, and there could be 2 others. There are 6 cottars. It is and was worth 20 shillings; T.R.E. 60 shillings. This land Turbern, one of Eddeva's men, held and could sell.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In WACHELEI [Wakeley (Farm)]¹ Ralf holds of the Count 40 acres of land. There is land for 1 plough. One sokeman is there and one serf. Meadow is there sufficient for 2 oxen. It is and was worth 10 shillings; T.R.E. 20 shillings. This manor was held by Eddeva the fair.

In LANGEPORT [] Roger holds of the Count a half-hide. There is land for half a plough, and this is there, with 1 cottar and 2 serfs. It is worth 10 shillings; when received it was 5 shillings; T.R.E. 13 shillings. This land Alric, a man of archbishop Stigand, held and could sell.

IN HERFORT [HERTFORD] HUNDRET

The Count himself holds CESTREHUNT [Cheshunt]. It is assessed at 20 hides. There is land for 33 ploughs.² In the demesne are 10 hides, and on it there are 4 ploughs, and there could be 2 more. There 41 villeins and (*cum*) a priest and 12 bordars have 17 ploughs, and 10 chapmen (*mercatores*) pay 10 shillings of dues. There are 8 cottars and 6 serfs, and 1 mill worth 10 shillings. From the weir (is received) 16 pence. Meadow is there sufficient for 23 plough teams and for the horses of the demesne, pasture sufficient for the live stock, and woodland to feed 1,200 swine and worth (besides) 40 pence.

The Count himself holds HODESDONE [Hoddesdon]. It is assessed at 2 hides and 3 virgates. It is a berewick of Cestrehont [Cheshunt]. There is land for 4 ploughs. In the demesne there are 2 hides, and on it are 2 ploughs, and 2 villeins and (*cum*) 8 bordars have 2 ploughs. There is 1 serf. Meadow is there sufficient for 4 plough teams, pasture sufficient for the live stock, and woodland to feed 260 swine. From the weir (come) 100 eels. The total value of this manor and its berewick³ is 24 pounds; when received it

was 22 pounds; T.R.E. 30 pounds. This manor Eddeva the fair held. There was and is still 1 sokeman there holding a half-hide which he could sell T.R.E.

Wimund holds WERMELAI [Wormley] of the Count. It is assessed at 1 hide and a half. There is land for 2 ploughs. On the demesne is 1, and 6 bordars and (*cum*) 1 cottar have 1 plough between them. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 150 swine. From the half of a weir (come) 50 eels. It is and was worth 40 shillings; T.R.E. 60 shillings. This manor Als, one of Eddeva's men, held, and he could sell. This land belongs to (*jacet in*) Cestrehont [Cheshunt].

In BELINGEHOU [Bengeo] the Count holds 1 virgate. There is land for half a plough, and meadow for 2 oxen. It has always been worth 5 shillings. This land Snerr, one of the men of Eddeva the fair, held and could sell.

XVII. THE LAND OF COUNT EUSTACE⁴

Count Eustace holds TREUNGA [Tring].⁵ It was assessed at 39 hides T.R.E., and now (is assessed) at 5 hides and 1 virgate. There is land for 20 ploughs. In the demesne are 12 hides. There are 3 ploughs on it, and there could be 2 more. There 21 villeins and (*cum*) 6 bordars and 16 cottars and 3 sokemen have 9 ploughs between them, and there could be 6 more. There are 8 serfs, and 2 mills worth (*de*) 9 shillings. Meadow is there sufficient for 10 plough teams, pasture sufficient for the live stock of the vill and (worth) 3 shillings (besides), and woodland to feed 1,000 swine. In this vill is a berewick where are settled (*sedent*) 8 villeins having 2 ploughs, and there could be a third. Its total value is 22 pounds of 'white pennies' weighed by the Count (*ad pensum bujus comitis*)⁶; when received it was worth 20 pounds; T.R.E. 25 pounds. This manor Engelric held T.R.E., and there were there 2 sokemen, men of Osulf son of Frane, who held 2 hides and could sell; these sokemen were attached to this manor by Engelric himself after king William came—so the men of the hundred testify. One of the men of the abbot of Ramesyg [Ramsey] held 5 hides of this manor

¹ Had a church of its own and was subsequently extra-parochial.

² So in MS. But the details of the plough teams and the entry of the meadow-land show that 'xxxiii.' should be 'xxiii.' (J.H.R.).

³ *i.e.* Cheshunt with Hoddesdon (J.H.R.).

⁴ The count of Boulogne (J.H.R.).

⁵ Now in Dacorum Hundred.

⁶ *i.e.* silver pennies assayed by fire and weighed by the Count's own standard (J.H.R.).

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in the same way (*ad eundem modum*), but this man could not part with nor sell his land to alienate it from (*extra*) the church of St. Benedict (of Ramsey). Him also Engelric attached to this manor after king William came. He did not belong to it T.R.E.—so the hundred (court) attests. These aforesaid 3 sokemen who now belong to the manor, holding 1 hide, were Engelric's men and could sell their land.

IN ODESEI [ODSEY] HUNDRET

In RETTH [Reed] Robert fitz Rozelin holds of the Count 4 hides and 1 virgate and a half. There is land for 5 ploughs. On the demesne are 2, and 7 villeins and (*cum*) 2 bordars have 3 ploughs between them. There are 4 serfs. Meadow is there sufficient for a half-plough team, and pasture for the live stock. It is worth 4 pounds; when received it was worth 50 shillings; T.R.E. 4 pounds. This manor Alward, one of earl Harold's men, held and could sell.

The Count himself holds ANESTIGE [Anstey]. It is assessed at 5 hides. There is land for 10 ploughs. In the demesne are 3 hides, and on it are 2 ploughs, and there could be a third. There 8 villeins and (*cum*) a priest and 6 bordars have 5 ploughs between them, and there could be 2 more. There are 5 cottars and 6 serfs. There is meadow sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 50 swine. In all its value is and was 14 pounds; T.R.E. 15 pounds. This manor Alward, a thegn of earl Harold's,¹ held and could sell.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In CORNEI [Corneybury in Layston] Robert holds of the Count 1 hide. There is land for 1 plough, and this is there, with 4 bordars and 4 cottars and 2 serfs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 10 swine. Its total value is 13 shillings and 4 pence; when received it was worth 10 shillings; T.R.E. 20 shillings. Of this land Alward, one of Harold's men, held 1 virgate and could sell, and Gode, one of king Edward's men, held 3 virgates and could sell; of custom he rendered to the sheriff 3 pence or

the carrying of $\frac{3}{4}$ of 1 load (*aut tres partes unius avere*).

In TROCHINGE [Throcking] Rumold² holds of the Count 18 acres. There is land for 2 oxen to plough. It has always been worth 2 shillings. This land Alric, one of archbishop Stigand's men, held.

In ICHETONE [Layston]³ Rumold² holds of the Count half a hide. There is land for 1 plough. There is 1 bordar. Its value is 20 shillings; when received it was 40 shillings; and the same T.R.E. This land 'Godid,'⁴ a 'man' of Asgar the staller, held and could sell.

In the same vill 2 knights (*milites*) hold of the Count 20 acres. There is land for 2 oxen (to plough), and these are there. It has always been worth 3 shillings. This land 'Godid,'⁴ a 'man' of Asgar the staller, held and could sell.

In BERCHEDENE [Barksdon (Green)]⁵ Robert holds of the Count 1 hide as 1 manor. There is land for 4 ploughs. On the demesne are 2, and 2 villeins and (*cum*) a priest and 5 bordars have 2 ploughs. There are 6 serfs. Meadow is there sufficient for a half-plough team, and wood (*nemus*) sufficient for the fences and for 30 swine; and 1 mill worth 2 shillings and 8 pence. Its total value is 3

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pounds; when received it was worth 40 shillings; T.R.E. 100 shillings. This manor Alward, one of earl Harold's men, held and could sell.

In WACHELEI [Wakeley (Farm)]⁷ Robert holds of the Count 40 acres. There is land for 1 plough. Meadow is there sufficient for 2 oxen, and wood sufficient for the fences. Its value has always been 5 shillings. This land Alward, one of earl Harold's men, held and could sell.

In ALFLEDAWICHA [Beauchamps]⁸ Ru-

² See Mr. Round's *Commune of London and other Studies*, p. 120.

³ See p. 310, note 4.

⁴ 'Godid' is a woman's name.

⁵ In Aspenden.

⁶ 'Stein Ware,' is scribbled on the bottom margin of this folio.

⁷ See p. 320, note 1.

⁸ In Widdial. It was called Beauchamps after a family which held it as under-tenants (J.H.R.).

¹ Here is seen again the Domesday scribe's indifference to exact nomenclature, this 'thegn' being only styled 'man' (*homo*) in the entries which precede and follow (J.H.R.).

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mold¹ holds of the Count 2 hides. There is land for 2 ploughs, and these are there, and (*cum*) 7 bordars and 2 serfs. There is 1 mill worth 2 shillings. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock, woodland to feed 20 swine. It is worth 20 shillings; when received it was worth 40 shillings; and 40 shillings T.R.E. This land 'Godid,'² a 'man' of Asgar, held and could sell.

In HOREMEDE [Hormead] 2 Englishmen hold of the Count 3 hides and 1 virgate. There is land for 3 ploughs and a half-plough. On the demesne are 2, and a priest and (*cum*) 2 cottars have between them 1 plough and a half-plough. Meadow is there sufficient for 1 plough team, woodland to feed 12 swine. Its total value is 3 pounds; when received 4 pounds; T.R.E. 100 shillings. This manor Wlward, one of Asgar the staller's men, held and could sell.

In BORDESDENE [Boreson]³ the Count holds 1 hide and 1 virgate and 4 acres. There is land for 3 ploughs. In the demesne are 3 virgates, and there is 1 plough on it; and 11 villeins and (*cum*) a priest have 2 ploughs between them. There are 2 serfs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 20 swine. Its total value is and was 3 pounds; T.R.E. 4 pounds. This land 9 sokemen of Asgar the staller's held and could sell.

The Count himself holds COCHEHAMMESTEDE [Cockhamstead]. It is assessed at 2 hides. There is land for 6 ploughs. In the demesne are 3 virgates, and there is 1 plough on it. There 5 villeins and (*cum*) 3 bordars have 5 ploughs between them. One cottar is there and 4 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, and woodland to feed 10 swine. Its total value has always been 7 pounds. This manor Gouti, one of earl Harold's thegns, (held) and could sell.

In HODESDONE [Hoddesdon] the canons of St. Martin,⁴ London, hold 1 hide of the Count. There is land for 1 plough, and this is there, with 3 bordars. Meadow is there

sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 50 swine. From the weir (are received) 21 eels. The value is 15 shillings; when received it was 5 shillings; T.R.E. it was 40 shillings. This land 'Godid,'⁵ a 'man' of Asgar the staller, held and could sell.

IN BRACHINGES [BRAUGHING] HUNDRET

The Count himself holds BRACHINGES [Braughing]. It is assessed at 5 hides. There is land for 11 ploughs. In the demesne are 3 hides, and there are 3 ploughs on it. There 10 villeins and (*cum*) a priest and 9 bordars have 8 ploughs between them. There are 3 cottars and 6 serfs, and 1 mill worth 12 pence. Meadow is there sufficient for 3 plough teams, pasture sufficient for the live stock of the vill, woodland to feed 6 swine. Its total value is and was 16 pounds; T.R.E. 20 pounds. This manor 2 thegns held. Of these one, king Edward's man, held 4 hides; the other, Asgar the staller's man, held 1 hide. They could not sell because the holdings were always in 'almoyn' (*jacuerunt in elemosina*) in king Edward's time and the times of all his predecessors, as the shire-moot (*scyra*) attests.

XVIII. THE LAND OF EARL ROGER⁶

IN ODESEI [ODSEY] HUNDRET

Earl Roger holds in BRADEFELLE [Broadfield] a half-hide. There is land for half a plough, but this is not there. There is woodland to feed 40 swine. It is and was worth 5 shillings; T.R.E. 10 shillings. This land Gode held of queen Eddid and could sell.

XIX. THE LAND OF ROBERT DE OLGİ

Robert de Oilgi holds THEISESCOTE⁷ [Tiscote] and Ralf Basset holds it of him. It was assessed at 4 hides T.R.E., and it is now assessed at 2. There is land for 4 ploughs. On the demesne are 2, and 3 villeins and 'a half'⁸ and (*cum*) 2 sokemen, who hold one hide (*de una hida*), and 5 bordars have 2 (between them). There is 1 cottar and 1 serf, and 1 mill worth (*de*) 10 shillings. Meadow is there sufficient for 3 plough teams. In all its value is 70 shillings; when received it was 4

¹ See Mr. Round's *Commune of London and other Studies*, p. 120.

² 'Godid' is a woman's name.

³ In Braughing, formerly in Little Hormead.

⁴ St. Martin's le Grand, founded by his predecessor Engelric (J.H.R.).

⁵ 'Godid' is a woman's name.

⁶ Roger de Montgomery, of Arundel and Shrewsbury (J.H.R.).

⁷ Now in Dacorum Hundred.

⁸ So the MS.

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pounds; T.R.E. 100 shillings. This manor 5 sokemen held. Two of these, Brictric's men, had 1 hide and a half; 2 others, men of Osulf son of Frane, had 1 hide and a half; the fifth, Edmer Atule's man, had 1 hide. None of these belonged to Wigot, (Robert's) predecessor (*ad antecessorem Wigot*), but each of them could sell his land. One of these bought his land from king William for 9 ounces of gold, as the men of the hundred attest, and afterwards put himself under Wigot for protection (*ad Wigotum se vertit pro protectione*).

In POLEHANGRE [Polehanger¹] Martel holds of Robert de Oilgi half a hide. There is land for 1 plough, and this is there, with 2 cottars and 2 serfs. Meadow is there sufficient for 1 plough team, woodland to feed 2 swine. It is and was worth 10 shillings; T.R.E. 20 shillings. This land Alvrice, a man of earl Waltheof (Wallef), held and could sell.

XX. THE LAND OF ROBERT GERON²

Robert Grenon holds 1 hide in MERDELAI [Mardleybury]³ and Alward holds it of him. There is land for 3 ploughs. On the demesne is 1, and 4 villeins and (*cum*) 2 bordars have 2 ploughs. There are 3 cottars. Pasture is there sufficient for the live stock, woodland to feed 200 swine. It is worth 30 shillings; when received it was worth 40 shillings; T.R.E. 50 shillings. The same who (now) holds held (it) T.R.E. and could sell.

In AIETE [Ayot St. Peter]⁴ William holds of Robert 2½ hides. There is land for 6 ploughs. On the demesne is 1, and there could be another. Six villeins there and 3 bordars have 3 ploughs, and there could be a fourth. There is 1 serf. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 150 swine. Its total value is 40 shillings;

¹ Polehanger is in Bedfordshire, between Shefford and the detached portion of Herts which lies in Meppershall (J.H.R.).

² The manors in Broadwater Hundred begin here.

³ In Welwyn, not Mardleybury in Therfield, as assumed by the county historians. The fact that Alward was a Domesday juror for the Hundred of Broadwater proves that this estate, like those which follow, was in that Hundred (J.H.R.).

⁴ Otherwise Ayot Munfichet, being so named from the family of Montfichet, Robert Gernon's heirs (J.H.R.).

when received it was 60 shillings; T.R.E. 6 pounds. This land 2 thegns held, king Edward's men, and could sell. This (land) William, Robert's man, took by encroachment to the king's wrong (*invasit super regem*), but he calls on his lord (Robert) as his warrantor (*reclamat dominum suum ad protectorem*).

In GRAVELAI [Graveley] William holds of Robert a half-hide. There is land for 1 plough, but no plough is there. It is worth 4 shillings; when received it was worth 5 shillings; and 5 shillings also T.R.E. This land 2 men of Goduine of Benefelle [Bendfield] held and could sell.

In SCILVA [? Chells in Stevenage⁵] William holds of Robert a half-hide. There is land for 1 plough, but no plough is there. There is 1 cottar. It is and was worth 10 shillings; T.R.E. 20 shillings. This land Alvrice, a man of Alvrice of Belinton [Bennington], held and could sell.

In WLWENEWICHE [Wollenwick⁶] William holds of Robert a half-hide and a half-virgate. There is land for 1 plough, and this is there, with 2 bordars and 2 cottars. Meadow is there sufficient for a half-plough team, and woodland to feed 20 swine. It is worth 6 shillings; when received it was worth 10 shillings; T.R.E. 20 shillings. This land Goduin, a man of Almar of Benintoe [Bennington], held and could sell.

In WIMUNDELAI [Wymondley⁷] William holds of Robert 1 hide. There is land for 1 plough, but it is not there. One cottar is there. Meadow is there sufficient for a half-plough team. It is worth 6 shillings; when received it was worth 10; T.R.E. 15 shillings. This land Alfet held under Robert fitz Wimarch on the day when king Edward was living and died and he could not sell except by his (Robert's) leave.

The same William holds of Robert LECEWORDE [Letchworth]. It is assessed at 10 hides. There is land for 7 ploughs. On the demesne are 2, and 9 villeins and (*cum*) a priest have 5 ploughs between them. There are 2 sokemen holding 1½ hides (*de una bida et dimidio*) and 4 cottars and 1 serf.

⁵ See Introduction, p. 298.

⁶ Ibid (p. 297) for this lost name.

⁷ Proved to be Little Wymondley, by the fact that the Albemarle co-heir of the Montfichets is found holding these later (J.H.R.).

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Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, and woodland to feed 100 swine. Its total value is 6 pounds; when received it was 7 pounds;

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T.R.E. 8 pounds. This manor Goduin of Souberie [? Soulbury]¹ held, a thegn of king Edward's, and could sell; and 3 sokemen, his (Goduin's) men, had 1 hide and 3 virgates and could sell.

In WELGA [Welwyn] Robert de Pontardon holds 1 hide and a half of Robert, and 20 acres. There is land for 3 ploughs. On the demesne is 1 and another could be added. There 3 villeins and 6 bordars have 1 plough. There are 1 cottar and 2 serfs. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock. It is and was worth 30 shillings; T.R.E. 40 shillings. This land Godric, a man of Almar of Benintone [Bennington], held and could sell.

IN ODESEI [ODSEY] HUNDRET

In WALLINGTON [Wallington] William holds of Robert 3 hides all but 20 acres. There is land for 4 ploughs. Two are there, and there could be 2 more. There are 3 villeins and 6 cottars. Pasture is there sufficient for the live stock, and wood sufficient for the fences. It is worth 35 shillings all but 4 pence. When received it was worth 60 shillings; T.R.E. 100 shillings. This land Alvrice, a man of Goduin son of Ulestan, held and could sell.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In SUMMERSELE [] William holds a half-hide of Robert. There is land for 1 plough, which is there, and (*cum*) 1 cottar. Meadow is there sufficient for a half-plough team, wood sufficient for the fences. It is worth 7 shillings and 8 pence; when received it was worth 10 shillings; T.R.E. 20 shillings. This land Alvred, a man of Asgar the staller's, held and could sell.

In SAPEHAM [] William holds of Robert 2 hides. There is land for 4 ploughs. On the demesne is 1 plough and a half-plough, and there could be another half-plough. Four bordars there have 1 plough between them, and there could be another. There are 3 cottars and 2 serfs. Meadow is there sufficient for half a plough team, pasture sufficient for the live stock, and wood

for the fences. This land is worth 40 shillings; when received it was worth 60 shillings; T.R.E. 4 pounds. This manor 2 sokemen, men of Goduine of Benefelle [Bendfield], held and could sell.

In BORDESDENE [Boreson (Green)]² William holds of Robert a half-virgate. There is land for a half-plough, and it is there, with 4 bordars. Meadow is there sufficient for 2 oxen, wood sufficient for the fences. It has always been worth 12 shillings and 8 pence. This land Lewin, a man of Goduin of Benefelle [Bendfield], held. The soke belonged to Asgar the staller. He could sell.

IN BRACHINGES [BRAUGHING] HUNDRET

Anschitil holds of Robert WESTMELE [Westmill]. It is assessed at 7 hides and 1 virgate. There is land for 14 ploughs. On the demesne are 4, and 18 villeins and 5 Frenchmen with 12 bordars have 10 ploughs between them. There are 15 cottars and 2 serfs, and 3 mills worth 21 shillings and 8 pence. Meadow is there sufficient for 4 plough teams, pasture sufficient for the live stock, woodland to feed 100 swine. Its total value is 17 pounds; when received it was 10 pounds; T.R.E. 20 pounds. This manor Achi, a thegn of earl Harold's, held and could sell.

XXI. THE LAND OF ROBERT DE TODENI

IN TREUNGE [TRING]³ HUNDRET

Rotbert de Toden holds MASCEWELLE [Miswell in Tring] and Ralf holds it of him. It was assessed at 14 hides T.R.E., and now is assessed at 3 hides and 2½ virgates. Yet there always are 14 hides (there).⁴ There is land for 7 ploughs. On the demesne are 2, and 15 villeins with 4 bordars have 5 ploughs between them. Meadow is there sufficient for 7 plough teams, pasture sufficient for the live stock and (worth) 2 shillings (besides), woodland to feed 500 swine. Its total value is 100 shillings and 1 ounce of gold; when received it was worth 7 pounds; T.R.E. 8 pounds. This manor Osulf son of Frane, a thegn of king Edward's, (who was) predecessor of Robert de Toden, held.

² In Braughing, formerly in Little Hormead.

³ Now part of Dacorum Hundred.

⁴ See Introduction (p. 290) for the meaning of this phrase.

¹ In Buckinghamshire.

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IN DANAIS [DACORUM] HUNDRET

In BEREWORDE [Barwythe]¹ Baldric holds of Robert 5 hides. There is land for 3 ploughs. On the demesne are 2, and there could be a third. There are 3 villeins and (*cum*) a priest and a certain Frenchman and (*cum*) 4 bordars. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock of the vill, woodland to feed 100 swine. Its total value is 40 shillings; when received it was 30 shillings; T.R.E. 60. This land Osulf son of Frane held and could sell to whom he wished.

XXII. THE LAND OF RALF DE TODENI

IN DANEIS [DACORUM] HUNDRET

Ralf de Tode ni holds FLAMMESTEDE [Flamstead]. It was assessed at 4 hides T.R.E., and now is assessed at 2. There is land for 12 ploughs. In the demesne are 2 hides, and on it are 2 ploughs; and 22 villeins have 8 ploughs between them, and 2 more could be there. Seven cottars are there and 4 serfs. There is woodland to feed 1,000 swine. In all the value is 11 pounds; when received it was 9 pounds; T.R.E. 12 pounds. Achi, a thegn of king Edward's, held this manor.

IN BRACHINGES [BRAUGHING] HUNDRET

Roger holds of Ralf WESMELE [Westmill]. It is assessed at 4 hides and 3 virgates. There is land for 10 ploughs. On the demesne are 2, and there could be a third. Fourteen villeins there with 9 bordars have 7 ploughs between them. There are 3 cottars and 2 serfs, and a mill worth 10 shillings. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 60 swine. In all its value is 12 pounds; when received it was 10 pounds; T.R.E. 14 pounds. This manor Sexi, a house-carl of king Edward's, held; and a sokeman, a man of Anschil of Wara [Ware], had there 1 virgate and could sell it. And after king William came it was sold and attached to this manor, where it did not belong (*non fuit*) T.R.E.

XXIII. THE LAND OF RALF DE LIMESY

IN ODESEI [ODSEY] HUNDRET

Ralf de Limesy holds in HAINSTONE [] a half-hide and quarter-virgate.

¹ In Studham, Beds, just over the present border.

There is land for a half-plough. There is 1 cottar, and there is meadow sufficient for 2 oxen. It is and was worth 10 shillings; T.R.E. 20 shillings. This land Lemar, one of archbishop Stigand's men, held and could sell.

Ralf himself holds CALDECOTA [Caldecot] as 1 hide and 1 virgate. There is land for 5 ploughs. In the demesne are 3½ virgates.² Nine villeins there and (*cum*) a priest have 2 ploughs and a half-plough, and there could be 1 more plough and a half-plough. There are 4 cottars. Meadow is there sufficient for 2 oxen. This land is and was worth 40 shillings; T.R.E. 100 shillings. This manor Lemar, one of archbishop Stigand's men, held and could sell.

Ralf himself holds PERITONE [Pirton]. It is assessed at 10 hides. There is land for 20 ploughs. In the demesne are 2 hides, and on it there are 6 ploughs. There 24 villeins and (*cum*) a priest and 29 bordars have 12 ploughs, and there could be 2 more. An English knight (*miles*) is there and 1 sokeman and (*cum*) 4 cottars. There are 4 mills worth 73 shillings and 4 pence. On the Englishman's land and the sokeman's, that is to say on 2 hides, are settled (*manent*) 1 villein and 8 cottars. Meadow is there sufficient for 10 plough teams. There are 10 serfs. Pasture is there sufficient for the live stock of the vill, and woodland to feed 500 swine. From woodland and pasture is a revenue of 10 shillings. Its total value is 20 pounds; when received it was 22; T.R.E. 25 pounds. This manor archbishop Stigand held, and there were 2 sokemen there who are there still. They could not sell.

This above is [in] the half-hundred of Hiz [Hitchin].

IN HERTFORD HUNDRET

Ralf himself holds EMMEWELLE [Amwell]. It is assessed at 14½ hides. There is land for 16 ploughs. In the demesne are 7 hides, and on it are 2 ploughs, and there could be 2 more. There 24 villeins and (*cum*) a priest and 4 Frenchmen and 7 bordars have 8 ploughs, and 4 could be added. There are 19 cottars and 2 serfs, and 1 mill worth 6 shillings. Meadow is there sufficient for 16 plough teams, pasture for the live stock of the vill, woodland to feed 200 swine, and from

² The demesne ploughs are here omitted, but the context shows that there should have been one (J.H.R.).

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hay and pasturage is a revenue of 10 shillings. The total value is 14 pounds and 10 shillings; when received it was 12 pounds; T.R.E. it was 18. This manor earl Harold held.¹

XXIV. THE LAND OF RALF BANGIARD

Ralf Bangiard holds ALSIESWICHE [Als-
wick]² and William holds (it) of him. It is
assessed at 6 hides. There is land for 7
ploughs. On the demesne are 2, and a third
could be added. There 4 villeins have 3
ploughs between them, and there could be a
fourth. There are 11 cottars and 7 serfs.
Meadow is there sufficient for 1 plough team,
pasture sufficient for the live stock of the vill,
and woodland to feed 10 swine. In all
its value is 7 pounds; when received it was
100 shillings; T.R.E. 8 pounds. This
manor Almar, one of earl Guert's³ men, held
and could sell.

fo. 138b

In HOREMEDE [Hormead] William holds
of Ralf 1 virgate. There is land for a
half-plough, but it is not there. There is
wood only for fences. It has always been
worth 5 shillings. This land Wlward, one
of Asgar the staller's men, held.⁴ The men
of count Eustace claim to have it back because
they had been seized of it for 2 years after the
Court came into possession of this honour (*ad
hunc honorem venit*), as the men of the hundred
testify.

IN HERTFORD HUNDRET

Ralf himself holds HEREFORDINGBERIE
[Hertingfordbury]. It is assessed at 5 hides.
There is land for 10 ploughs. In the demesne
there are 3 hides and 1 virgate, and on it
are 2 ploughs, and there could be a third.
There 5 villeins with 1 Frenchman and 6
bordars have 5 ploughs, and there could be
two more. There are 11 cottars and 4 serfs,
and 2 mills worth 6 shillings. Meadow
is there sufficient for 3 plough teams, pasture
sufficient for the live stock of the vill, wood-
land to feed 200 swine. From woodland
and pasture is a revenue of 7 shillings. In
all its value is 8 pounds; when received it
was 6 pounds; T.R.E. 10 pounds. This
manor Alwin, a thegn of earl Harold's, held
and could sell.

¹ See Introduction, p. 299.

² In Layston.

³ Gyrth, brother of Harold (J.H.R.).

⁴ Compare the Hormead entry on p. 322
(J.H.R.).

XXV. THE LAND OF RANNULF ILGER'S BROTHER

Rannulf brother of Ilger holds 1 hide in
STAGNEHOU [Stagenhoe⁶] and William holds
it of him. There is land for 3 ploughs. On
the demesne is 1, and 6 villeins have another,
and there could be a third. There are 2
cottars, and there is woodland to feed 20
swine. This land is worth 50 shillings; when
received it was worth 20 shillings; T.R.E.
4 pounds. This manor Turbern, a man of
king Edward, held and could sell.

IN BRACHINGES [BRAUGHING] HUNDRET

Rannulf himself holds in STANESTEDE [Stan-
stead] 17 hides⁶ and a half-virgate. There is
land for 16 ploughs. In the demesne are 13
hides, and on it are 2 ploughs, and there could
be a third. There 4 villeins and (*cum*) a
priest and the reeve (*preposito*) of the vill and
4 Frenchmen have 8 ploughs, and there
could be 5 more. There are 6 cottars and
2 serfs, and 1 mill worth 10 shillings. Meadow
is there sufficient for 16 plough teams, pasture
sufficient for the live stock of the vill, wood-
land for 100 swine. There are also 7 bur-
gesses, who pay with other dues of meadow
and wood 23 shillings. The total value is
17 pounds; when received it was 10 pounds;
T.R.E. 20 pounds. Alwin of Godtone
held 11 hides and a half-virgate of this
manor. Of these hides Ralf Tailgebosc gave
10 with his niece as a marriage portion to
Rannulf, and the eleventh hide he attached
to (*posuit in*) Honesdone [Hunsdon].⁷ The
other 7 hides 4⁸ sokemen held. Four of these,
Anschi's men, had 4 hides, the other 10,
men of Alwine of Godtone, had 3 hides and
gave of custom to the King's sheriff 12 pence
yearly. But all the 14 could sell their land.

XXVI. THE LAND OF HUGH DE GRENTEMAISNIL

IN BRACHINGES [BRAUGHING] HUNDRET

Hugh de Grentmaisnil holds in WARAS
[Ware] 24 hides. There is land for 38

⁶ In St. Paul's Walden.

⁸ 18 hides, apparently, are accounted for in
the details (J.H.R.).

⁷ It seems clear that 'Honesdone' must be
Hunsdon, but the passage should be compared
with the words at the end of the survey (p. 344),
where Ralf is said to have taken this hide from
Stanstead and attached it to 'Hodesdone.' I
believe that the latter name is given in error for
'Honesdone' (Hunsdon) (J.H.R.).

⁸ ? a scribal error for 14.

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ploughs. In the demesne there are 13 hides, and on it are 3 ploughs. There could be 3 more. There 38 villeins and (*cum*) a priest and the reeve (*preposito*) of the vill and (*cum*) 3 Frenchmen and 2 Englishmen have 26 ploughs and a half-plough.¹ There are 27 bordars and 12 cottars and 9 serfs. Under the Frenchmen and the Englishmen are 32 men between villeins and bordars.² There are 2 mills worth (*de*) 24 shillings, and 400 eels less 25; and other men have 3 mills producing 10 shillings yearly. Meadow is there sufficient for 20 plough teams, woodland to feed 400 swine. There is an enclosure for beasts of the chase (*parcus bestiarum silvaticarum*) and 4 arpents of vineyard just planted. The total value is 45 pounds; when received it was 50 pounds; T.R.E. also 50. This manor Anschil of Waras [Ware] held, and 1 sokeman, his man, had there 2 hides, and another sokeman, earl Guert's³ man, held half a hide. Either could sell. These two, after king William came, were attached to this manor. They did not belong to it in king Edward's time—so the shire-moot (*scira*) testifies.

XXVII. THE LAND OF HUGH DE BELCAMP

Hugh de Beauchamp (*Belcamp*) holds in BELINGEHOU [Bengeo] as 1 manor 6 hides, and 2 knights (*milites*) hold them of him. There is land for 8 ploughs. On the demesne are 2 ploughs, and 7 villeins with 6 bordars have 2 ploughs between them, and there could be 4 more. There are 2 serfs, and 1 mill worth 6 shillings and 8 pence. Meadow is there sufficient for 3 plough teams, pasture sufficient for the live stock of the vill, and woodland to feed 20 swine. In all the value is and was 3 pounds; T.R.E. 6 pounds. This manor Brand, a house-carl of king Edward, held.

XXVIII. THE LAND OF WILLIAM DE OW

William de Ow (holds) in GRAVELAI⁴ [Graveley] 1½ virgates and Peter⁵ holds these of him. There is land for half a plough, but it is not (there). There are 2 villeins.

¹ There would seem to be an omission here of a clause stating that 5½ more ploughs were required for the complement (J.H.R.).

² *i.e.* counting them together (J.H.R.).

³ Harold's brother Gyrth (J.H.R.).

⁴ The manors in Broadwater Hundred begin here.

⁵ Peter de Valognes, the sheriff (J.H.R.).

This land is worth 3 shillings; when received it was worth 4 shillings; and 4 shillings also T.R.E. Alestan of Boscombe [Boscombe]⁶ held 1 virgate of this land, and it belonged to (*jacebat in*) Westone [Weston], and Lepsi, a sokeman of king Edward, (held) a half-virgate which he could sell, and of custom he gave to the sheriff a half-penny. Of this half-hide (*sic*) 8 acres and 1 toft 'lay' (*jacebant*) in Stigenace [Stevenage]. These king Edward gave to St. Peter of Westminster. Roger, bailiff (*minister*) of Peter de Valongies, now holds them.

In WILGA [Welwyn] William de Ow holds half a hide. There is land for a half-plough, but it is not there. This land was always worth 3 shillings. Alestan of Boscombe held it, and it belonged to (*jacebat in*) Westone [Weston].

In the same vill William de Mara holds 2 hides of William de Ow. There is land for 3 ploughs. On the demesne is 1, and 5 villeins have another, and a third could be added. There are 2 cottars. Pasture is there sufficient for the live stock. This land is and was worth 32 shillings; T.R.E. 4 pounds. Alestan of Boscombe [Boscombe] held 1 hide of it. It belonged to (*jacebat in*) Weston. And Alviat, his man, held 1 hide. Either could sell.

William de Ow himself holds WESTONE [Weston]. It is assessed at 10 hides. There is land for 23 ploughs. In the demesne are 5 hides, and there are 5 ploughs on it, and there could be a sixth. There 33 villeins and (*cum*) 2 priests and 1 knight (*miles*) and 2 Frenchmen have 16 ploughs (between them), and there could be another (plough). There are 15 bordars and 12 cottars and 10 serfs, and 1 mill worth 10 shillings. Meadow is there sufficient for 3 plough teams, pasture sufficient for the live stock, woodland (*silva*) to feed 500 swine. From wood (*bosco*) and pasture (come) 13 shillings and 4 pence. Its value in all is 20 pounds; when received it was 25 pounds; T.R.E. 30 pounds. This manor Alestan, a thegn of king Edward, held.

In BOXE [Boxbury]⁷ Peter holds of William de Ow 2 hides and 3 virgates. There is land for 5 ploughs. On the demesne are 2, and there could be a third. There 2 villeins with 4 bordars have 2 ploughs between them.

⁶ In Wiltshire. See Introduction, p. 277.

⁷ In Stevenage.

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There are 3 cottars and 3 serfs. Wood is there sufficient for the fences. In all it is worth 50 shillings; when received it was worth 30 shillings; T.R.E. 60 shillings. This land Alward, a man of Alestan of Boscumbe [Boscombe] held. He could only sell 3 virgates of it.

IN ODESEI [ODSEY] HUNDRET

In CLADHELE [Clothall] William holds half a virgate and 3 acres. There is land for a half-plough, and this is there. This land was and is worth 29 pence; T.R.E. 3 shillings. Alestan held this land. It belonged to (*jacebat in*) Westone [Weston].

In HAMSTEWORDE¹ [Hinxworth] 2 knights hold of William 2 hides and a $\frac{1}{2}$ virgate. There is land for 2 ploughs, and these are there, and (*cum*) 4 villeins. There are 3 cottars and 2 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock. This land is worth 42 shillings and 6 pence; when received 20 shillings; T.R.E. 60 shillings. Three sokemen held this land. Two of these, king Edward's men, held 2 hides and a $\frac{1}{2}$ virgate; the third, a man of Alestan of Boscumbe, had 1 virgate.² All these could sell their land. Of custom they paid to the King's sheriff 8 pence and a half-penny yearly.

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In OFFELEI³ [Offley] William de Mara holds 8 hides and 8 acres of William de Ow. There is land for 16 ploughs. On the demesne are 4, and 16 villeins and (*cum*) a priest and 3 knights (*milites*) have 9, and there could be 3 more. There are 8 bordars and 4 cottars and 8 serfs. Pasture is there sufficient for the live stock of the vill, woodland to feed 12 swine. In all the value is 11 pounds; when received it was 8 pounds; T.R.E. 15 pounds. This manor Alestan of Boscumbe, one of king Edward's thegns, held.

XXIX. THE LAND OF WILLIAM DE ODBURVILE

IN EDWINESTREU [EDWINSTREE] HUNDRET

William de Odburgville holds in BERLAI [Barley] 4 hides and a half and 10 acres.

¹ So printed in the Record Commission, but the right form would be 'Hainsteworde,' and the MS. can be so read (J.H.R.).

² This virgate is not accounted for in the total given above (J.H.R.).

³ The manors in Hitchin Hundred begin here.

There is land for 5 ploughs. In the demesne are $2\frac{1}{2}$ hides and 10 acres, and on it are 2 ploughs; and 8 villeins and (*cum*) 3 bordars have 3 ploughs. One cottar is there and 2 serfs. There is wood sufficient for the fences. In all it is worth 4 pounds; when received 50 shillings; T.R.E. 100 shillings. This manor was held by Lewin, one of king Edward's thegns, and there one of his men held 1 virgate and they could (*potuer'*) sell.

XXX. THE LAND OF WALTER THE FLEMING⁴

Walter the Fleming holds MUNDANE [Little Munden]. It is assessed at 5 hides and 1 virgate. There is land for 8 ploughs. In the demesne are $3\frac{1}{2}$ hides, and on it is 1 plough, and there could be 2 more. There 12 villeins and (*cum*) a priest and 2 bordars have 5 ploughs. There are 2 serfs. Pasture is there sufficient for the live stock of the vill, woodland to feed 200 swine. In all its value is 6 pounds; when received it was 7 pounds; T.R.E. 8 pounds. This manor Lewin, earl Harold's man, held and could sell.

In SUTREHELLA [Libury]⁵ Walter holds 1 hide and a $\frac{1}{2}$ virgate. There is land for 2 ploughs. One is there, and another could be added. In the demesne is 1 hide, and there is 1 villein. Woodland is there sufficient for 15 swine. It is and was worth 20 shillings; T.R.E. 30 shillings. This land is a bere-wick of Mundena [Munden]. Torchil held it of Lewin and could not sell except by his leave.

In the same (vill) the same Walter holds 11 acres. They have always been worth 12 pence. Lewin held them and could sell.

XXXI. THE LAND OF EUDO FITZ HUBERT⁶

IN BRADEWATRE [BROADWATER] HUNDRET

Eudo the steward (*dapifer*) holds CHENEPEWORDE [Knebworth] and Humfrey⁷ holds it of him. It is assessed at 8 hides and 1 virgate. There is land for 12 ploughs. On the demesne are 2 ploughs, and there could be 2 others. There 20 villeins with 2 knights (*militibus*) and 2 bordars have 8 ploughs. There are 3 cottars and 4 serfs and 2 villeins (*rustici*), and 1 mill worth 12 shil-

⁴ See Introduction, p. 283.

⁵ A manor in Little Munden.

⁶ See Introduction, p. 285.

⁷ This was Humfrey d'Ansleville (J.H.R.)

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lings. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock of the vill, woodland to feed 1,000 swine. In all its value is 10 pounds; when received it was 100 shillings; T.R.E. 12 pounds. This manor was held by Aschil, one of king Edward's thegns, and one of his men held 1 hide and 1 virgate and could sell. Of dues he found 1 'avera' (the carrying of 1 load) when the King came into the shire. If the King did not come he paid 5 pence.

IN ODESEI [ODSEY] HUNDRET

In RETTH [Reed] Eudo holds 1 virgate. There is land for 2 oxen to plough. It has always been worth 2 shillings. This land Sinod, one of the men of St. Mary of Cetritz (Chatteris), held and could sell.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In BERLAI [Barley] Eudo holds 2 hides and 20 acres. There is land for 2 ploughs. In the demesne are $1\frac{1}{2}$ hides and 20 acres, and he works it with the ploughs that belong to him at Nuesselle (*laborat cum propriis carucis de Neusselle*) [Newsellsbury]. There 4 villeins have 1 plough between them. There are 2 serfs. This land is worth 30 shillings; when received 10 shillings; T.R.E. 40 shillings. Two brothers held this land. One of them was a sokeman of king Edward's and had 1 hide and 10 acres; the other, a man of Tochi's, had 1 hide and 10 acres. Either could sell.

In BERCHEWEIG [Barkway] Eudo holds Neusela [Newsellsbury]. It is assessed at 4 hides and a half-virgate.¹

In ICHETONE [Layston]² Walter holds of Eudo 6 acres. There is land for 1 ox (to plough). It has always been worth 12 pence. Aldred, one of king Edward's thegns, held it and could sell.

Richard de Sachanuilla holds of Eudo ABSSEDENE [Aspenden]. It is assessed at $1\frac{1}{2}$ hides. There is land for 3 ploughs. On the demesne are 2. A priest and (*cum*) 6 bordars have 1 plough. There are 3 serfs. Meadow is there sufficient for 1 plough team, and woodland to feed 20 swine. Altogether

its value is 4 pounds; when received it was 30 shillings; T.R.E. 60 shillings. This manor Aldred, one of king Edward's thegns, held.

Eudo himself holds NEUSELA [Newsellsbury]. It is assessed at 5 hides and half a virgate. There is land for 14 ploughs. In the demesne are 3 hides and a $\frac{1}{2}$ virgate, and on it are 5 ploughs. Ten villeins there and (*cum*) 6 bordars have 9 ploughs. There are 7 cottars and 21 serfs.³ Meadow is there sufficient for 1 plough team, woodland to feed 100 swine, pasture sufficient for the live stock of the vill. Its whole value is 18 pounds; when received it was 6 pounds; T.R.E. 12 pounds. Of this manor 4 hides and a $\frac{1}{2}$ virgate were held by Aldred, a thegn of king Edward's; and there 1 sokeman, earl Algar's man, held 3 virgates, and another sokeman, the aforesaid Aldred's man, had 1 virgate. This man paid 1 penny yearly to the sheriff. All these could sell their land.

IN HERTFORD HUNDRET

Humfrey⁴ holds of Eudo half a hide [⁵]. There is land for 2 ploughs. On the demesne is one, and 4 bordars have one plough. Seven cottars are there, and 1 mill worth (*de*) 6 shillings and 8 pence. Woodland is there to feed 50 swine. Its total value has always been 60 shillings. This land Lefsi, king Edward's bailiff (*prepositus*), held and could sell. The bishop of Bayeux took it from Lefsi and gave it to Eudo, and it was taken possession of to the wrong of the King (*occupata est super regem*). With this land when Humphrey took it from Eudo he got 68 oxen and 350 sheep and 150 swine and 50 goats and 1 mare, and 13 shillings and 4 pence of the King's rent (*de censu regis*), and between cloths and vessels (*inter pannos et vasa*) 20 shillings.

XXXII. THE LAND OF EDWARD THE SHERIFF

IN DANAIS [DACORUM] HUNDRET

Edward de Sarisberie⁶ holds GATESDENE [Great Gaddesden]. It was assessed at 6 hides T.R.E., and now is assessed at 3 hides, but 1 of these is assessed in Treunge Hundret

¹ This entry seems to be incomplete and superseded by the one below. Eudo's entire holding there was $5\frac{1}{2}$ hides, but this entry may refer only to what Aldred had held (J.H.R.).

² See p. 310, note 4.

³ *Servus* (as usual) in MS.

⁴ See note 7 above, p. 328.

⁵ MS. possibly defective.

⁶ Edward of Salisbury, sheriff of Wiltshire (J.H.R.).

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and its appraising belongs here (*hic apprecianda est*).¹ There is land for 12 ploughs. In the demesne are 2 hides, and there are 4 ploughs on it; and 15 villeins and (*cum*) a priest have 6 ploughs, and there could be 2 more. There are 2 bordars and 1 cottar and 8 serfs, and 1 mill worth 5 shillings. Meadow is there sufficient for 1 plough team and a half-plough team, pasture sufficient for the live stock of the vill, woodland to feed 500 swine. Its total value is 22 pounds; when received 20 pounds; T.R.E. 25 pounds. Wlwen held this manor of the abbot of St. Albans on the day when king Edward was living and died. He could not separate it from that church (*mittere extra ecclesiam*), to which it ought to have returned after his death—so the hundred court testifies.

IN HERTFORD HUNDRET

In ODES DONE [? Hoddesdon] Edward holds 4 hides less 30 acres. There is land for 3 ploughs. In the demesne are 3 hides, and there is 1 plough on it; and 4 villeins and 2 bordars have 1 plough between them, and there could be another. There are 5 cottars and 2 serfs. Meadow is there sufficient for 4 plough teams,² woodland to feed 20 swine; from the fishery (is received) 150 eels. It is worth 60 shillings; when received it was worth 30 shillings; T.R.E. 60 shillings. Gode held this manor of queen Eddid and could sell.

XXXIII. THE LAND OF GEOFFREY DE MANNEVILLE

IN DANEIS [DACORUM] HUNDRET

Geoffrey de Manneville holds in TITEBERST [Titeberst³] and Ralf holds of him 3 virgates. There is land for a half-plough. There are 1

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villein and 1 bordar, and woodland to feed 12 swine. It is and was worth 5 shillings; T.R.E. 10 shillings. Three sokemen held this land. Two of these were Asgar the staller's men, the third a man of St. Alban; he could not sell, but the other two could.

Geoffrey himself holds BISSEI [Bushey]. It

¹ That is to say, that for fiscal purposes one of the hides was in Tring Hundred, but that the whole estate is here valued together (J.H.R.).

² If the scribe has made no mistake, there was meadow for one team more than required, an anomalous entry (J.H.R.).

³ See p. 308, note 4.

is assessed at 15 hides. There is land for 10 ploughs.⁴ In the demesne are 5 hides, and there are 2 ploughs on it, and there could be a third. Ten villeins and (*cum*) 1 Frenchman and 8 bordars have 5 ploughs, and there could be a sixth. There are 2 mills worth 8 shillings. Meadow is there sufficient for the live stock, woodland to feed 1,000 swine. Its whole value is and was 10 pounds; T.R.E. 15 pounds. Lewin, a thegn of king Edward's, held this manor. There is a sokeman who was not there in king Edward's time; he holds 1 hide. He was one of queen Eddid's men T.R.E. and could sell.

Geoffrey himself holds SENLAI [Shenley]. It is assessed at 8 hides and 3 virgates. There is land for 9 ploughs. In the demesne are 3 hides, and there are 2 ploughs on it. Twelve villeins there have 4 ploughs, and there could be 3 more. Meadow is there sufficient for 1 plough, pasture sufficient for the live stock, woodland to feed 600 swine. Its whole value is 4 pounds; when received it was 5 pounds; T.R.E. 8 pounds. Asgar held this manor, and there 2 sokemen, men of his, had 1 hide and 3 virgates and could sell.

IN ALBANESTOU [CASHIO] HUNDRET

In CHAISSOU [Cassio(bury)] Tuold holds of Geoffrey 1 hide. There is land for 1 plough, but it is not there. Meadow is there sufficient for 1 plough team, and woodland to feed 30 swine. It is and was worth 5 shillings; T.R.E. 20 shillings. Alwin the huntsman, one of queen Eddid's men, held this manor and could sell. Geoffrey attached it to Bissey [Bushey], to which it did not belong T.R.E.

IN BRADEWATRE [BROADWATER] HUNDRET

In DICHELESWELLE [Digswell] Torchil holds of Geoffrey 2 hides. There is land for 8 ploughs and a half-plough. On the demesne are 2, and 12 villeins with 3 bordars have 6 ploughs and a half-plough. There are 4 cottars and 2 serfs, and 1 mill and a half-mill (*unum molendinum et dimidium*) worth 8 shillings and 8 pence. Pasture is there sufficient for the live stock, woodland to feed 100 swine. In all the value is 4 pounds; when received it was 50 shillings; T.R.E. 4 pounds. The same man who holds it now held it T.R.E. He was one of Asgar the staller's men and could sell.

⁴ But the details only allow land for 9 ploughs. Compare the Sandon case on p. 317, note 1 (J.H.R.).

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IN ODESEI [ODSEY] HUNDRET

In WALLINGTON [Wallington] Siward holds of Geoffrey 1 virgate. There is land for a half-plough, but there is nothing there (*non est ibi*) but 1 cottar. It is worth 5 shillings; when received it was worth 3 shillings; T.R.E. 10 shillings. Edred, one of Asgar's men, held this land and could sell.

In ASCEWELLE [Ashwell] Germund¹ holds of Geoffrey 1 virgate. There is land for a half-plough, and it is there, with 2 bordars. Meadow is there sufficient for a half-plough team. Its value has always been 10 shillings. This land Godeve² held of Asgar. She could not sell except by his consent.

In HAINSTONE [] Germund¹ holds of Geoffrey 2 hides and $\frac{1}{4}$ virgate as 1 manor. There is land for 2 ploughs. One is there on the demesne, and there could be another. There are 5 villeins and 4 bordars. Pasture is there sufficient for the live stock, meadow sufficient for 1 plough team. This land is worth 3 shillings; when received it was worth 30 shillings; T.R.E. 4 pounds. Wlvric, one of Asgar the staller's men, held it and could sell.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In BERCHEWEI [Barkway] Hugh holds of Geoffrey 3 hides as 1 manor. There is land for 7 ploughs. On the demesne are 3, and 12 villeins and (*cum*) a priest and 15 bordars have 4 ploughs. There are 4 cottars and 6 serfs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 50 swine. From pasture and woodland is (also) a revenue of 2 shillings and 3 ploughshares (*sacos*). In all its value is 6 pounds; when received it was 3 pounds; T.R.E. 6 pounds. Two of Asgar the staller's men held this manor and could sell.

In LANGEPORT [] Saward holds of Geoffrey 1 virgate. There is land for a half-plough, and this is there, and 1 cottar and 2 serfs. It has always been worth 5 shillings. Alvred, one of Asgar's men, held it and could sell.

In BORDESDENE [Boreson (Green)]³ Turald holds of Geoffrey half a hide and 9 acres.

There is land for 2 ploughs and a half-plough. On the demesne is 1, and 2 villeins with 2 bordars have 1 plough and a half-plough. Pasture is there sufficient for the live stock, meadow sufficient for 1 plough team, wood for the fences. This land is worth 20 shillings; when received it was worth 10 shillings; T.R.E. 40 shillings (?).⁴ Four sokemen of Asgar the staller's soke held this land and could sell.

IN HERTFORD HUNDRET

In STIICESWORDE [] Germund⁵ holds of Geoffrey 1 hide. There is land for 1 plough and a half-plough. One plough is there, and there could be a half-plough more. There are 3 cottars and 2 serfs. Meadow is there sufficient for 1 plough team and a half-plough team and for the requirements of the demesne (*ad dominicum opus*), woodland to feed 100 swine, pasture sufficient for the live stock. Its value is and was 20 shillings; T.R.E. 40 shillings. Burgi, one of Asgar's men, held this manor and could sell.

In HODESDONE [Hoddesdon] Ralf holds of Geoffrey 1 hide. There is land for 1 plough, and this is there, and (*cum*) 3 bordars and 2 cottars. There is 1 serf. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 50 swine. From the weir (are received) 22 eels. This land is worth 20 shillings; when received it was 5 shillings; T.R.E. 40 shillings. This land Godid⁶ held, a 'man' of Asgar the staller, and could sell.

In BRICHENDONE [Brickendon (Green and Grange)] Walter holds of Geoffrey 1 virgate of land. There is land for a half-plough, and this is there, and (*cum*) 1 cottar. Woodland is there to feed 40 swine. It is and was worth 5 shillings; T.R.E. 10 shillings. Oswi, one of Asgar the staller's men, held this land and could sell.

In BELINGEHOU [Bengeo] Huard holds of Geoffrey 3 hides and 1 virgate. There is land there for 4 ploughs. On the demesne is 1, and there could be another. There 3 villeins and 2 bordars have 2 ploughs. There are 6 cottars, and 1 mill worth (*de*) 10 shillings. Meadow is there sufficient for 1

¹ This was Germund de St. Ouen (J.H.R.).

² This is Godgifu, a woman's name (J.H.R.).

³ In Braughing.

⁴ *Socb'* in MS., probably a scribal error for *sol'*. Compare p. 317, note 5 above (J.H.R.).

⁵ This was Germund de St. Ouen (J.H.R.).

⁶ 'Godid' is a woman's name (J.H.R.).

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plough team, pasture sufficient for the live stock, woodland sufficient for 4 swine. In all the value is 45 shillings; when received it was 40 shillings; T.R.E. 4 pounds. Tur-chil, one of Asgar the staller's men, held this manor and could sell.

IN BRACHINGS [BRAUGHING] HUNDRET

In STANESTEDE [Stanstead] a sokeman holds of Geoffrey 1 half-virgate. There is land for 2 oxen to plough, and these are there. Meadow is there sufficient to feed 6 oxen, woodland to feed 1 pig. It has always been worth 2 shillings. The same man held it T.R.E. He was Asgar's man and could sell.

Geoffrey himself holds SABRIXTEWORDE [Sawbridgworth] as $24\frac{1}{2}$ hides. There is land for 40 ploughs. In the demesne are 15 hides, and on it are 10 ploughs, and there could be 2 more. There 50 villeins and 4 sokemen and (*cum*) a priest have 28 ploughs. The reeve (*prepositus*) has a half-hide, a priest 1 hide. Of the villeins 14 have each 1 virgate and 35 each a $\frac{1}{2}$ virgate; and these villeins hold (in common) 1 virgate and a half and 9 acres, from which they render dues of 17 shillings and 4 pence yearly. There 46 bordars have each 8 acres; and there are 2 bordars 'of 10 acres'¹ and 20 cottars 'of 26 acres',¹ and there are 30 (other) cottars and 30 serfs. Under the sokemen are 7 cottars. Asgar has 2 hides. Under him are 2 villeins and 7 bordars and 3 cottars and 4 serfs. Kip has half a hide, and 1 mill worth (*de*) 20 shillings; and another sokeman (there is) 'of 5 shillings and 4 pence.'² Meadow is there for 20 plough teams, pasture for the live stock, woodland to feed 300 swine, and there is a revenue from these³ of 4 shillings. Altogether the value is 50 pounds; when received it was 60 pounds; and 60 also T.R.E. This

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manor Asgar the staller held, and there were there 4 sokemen. Two of these, men of the same Asgar, had half a hide and could sell, except the soke (*preter socam*); the third, one of earl Harold's men, had 1 virgate; the fourth, a man of Alwin of Godtone, had 1 virgate. These could part with their land or sell. The soke was Asgar the staller's. Besides these (*adhuc*) 1 sokeman of Asgar's had 2 hides, but he could not sell.

¹ *i.e.* holding that amount between them (J.H.R.).

² *i.e.* paying that amount (J.H.R.).

³ (*earum*) *i.e.* pasture and woodland.

Geoffrey himself holds TORLEI [Thorley]. It is assessed at 4 hides. There is land for 8 ploughs. In the demesne are 2 hides, and there are 4 ploughs on it. There 5 villeins and a knight (*quodam milite*)⁴ and (*cum*) a priest and 9 bordars have 3 ploughs and a half-plough, and another half-plough could be added. There are 11 serfs, and 1 mill worth 10 shillings. Meadow is there sufficient for 2 plough teams, woodland to feed 40 swine, pasture sufficient for the live stock. In all its value is 8 pounds; when received it was 100 shillings; T.R.E. 10 pounds. This manor Godid,⁵ a 'man' of Asgar the staller, held and could sell. William, bishop of London, bought this manor of king William by the concession (*per concessionem*) of the same Godid, and now the bishop of London claims it back (*reclamat*).

In WICHEHAM [Wickham]⁶ 1 sokeman holds of Geoffrey 8 acres. There is land for 2 oxen (to plough), woodland to feed 2 swine. It has always been worth 16 pence. The same man held it T.R.E. He was Godid's man and could sell. He was of the King's soke. This belonged to (*jacuit in*) Wicheham T.R.E. This sokeman Geoffrey attached to Torlei, where the soke did not belong T.R.E.

In WICHEHAM [Wickham] 2 knights (*milites*) hold of Geoffrey 1 hide and 3 acres. There is land for 2 ploughs. On the demesne is 1, and there could be another. Meadow is there sufficient for 1 plough team, woodland to feed 14 swine. In all its value is 10 shillings; when received it was 20 shillings; T.R.E. 40 shillings. Two sokemen, men of Asgar's, held this land and could sell.

XXXIV. THE LAND OF GEOFFREY DE BECH

IN DANEIS [DACORUM] HUNDRET

Geoffrey de Bech holds in WENRIGA [Windridge] and Ralf holds of him 1 hide and a half. There is land for 2 ploughs. 1 is there, and there could be another. There are 3 bordars. Woodland is there to feed 300 swine, pasture sufficient for the live stock. This land is and was worth 20 shillings; T.R.E. 50 shillings. Æilmar, one of earl Lewin's men, held this land and could sell.

⁴ This should be *quidam miles*.

⁵ 'Godid' is a woman's name (J.H.R.).

⁶ Wickham Hall in Little Hadham.

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IN TITEBERST [Titeberst]¹ Lovet holds of Geoffrey a half-hide. There is land for 6 oxen to plough, and there is 1 villein. Woodland is there to feed 24 swine. It has always been worth 5 shillings. This land a sokeman, one of the men of the abbot of St. Alban, held and could sell.

IN BRADEWATRE [BROADWATER] HUNDRET

IN DACEWORDE [Datchworth] 2 knights (*milites*) hold of Geoffrey 2½ virgates. There is land for 1 plough, and the plough is there, with 3 villeins. It is and was worth 12 shillings and 8 pence; T.R.E. 20 shillings. Three sokemen, men of king Edward's, held this land and could sell.

IN WELGE [Welwyn] Roger holds of Geoffrey 2 hides. There is land for 7 ploughs. On the demesne is 1, and there could be another. There 6 villeins and (*cum*) 4 bordars have 4 ploughs, and a fifth could be added. There are 4 cottars and 1 serf, and 1 mill worth 8 shillings. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 20 swine. In all the value is 50 shillings; when received it was 20 shillings; T.R.E. 6 pounds. Gode and his son held this land of queen Eddid and could sell.

IN LANGELEI [Langley] Otbert holds of Geoffrey 1 hide and a half. There is land for 3 ploughs. One plough is there, and there could be 2 others. There are 2 villeins and 4 cottars. There is 1 serf. Meadow is there sufficient for 1 ox, woodland to feed 150 swine. It is worth 30 shillings; when received it was worth 25 shillings; T.R.E. 30 shillings. Swen, one of earl Harold's men, held this manor and could sell.

IN SCELVE [?Chells]² Alvric Busch holds of Geoffrey ½ virgate. There is land for 2 oxen (to plough), and these are there. This land has always been worth 5 shillings. The same man held it T.R.E.; he was one of Swen's men (and) of king Edward's soke. Of custom he gave to the sheriff 1 half-penny yearly.

IN WILIE [Willian] Geoffrey de Bech himself holds 5 hides and 1 virgate. There is land for 9 ploughs. In the demesne are 2 hides, and on it are 2 ploughs, and there could be 2 more. There 10 villeins with 1 knight

(*milite*) and 4 bordars have 5 ploughs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, wood for the fences. Altogether it is worth 10 pounds and 14 shillings; when received it was worth 4 pounds; T.R.E. 12 pounds. This manor Leuric, a house-carl of earl Lewin, held and could sell; and there 1 sokeman, a man of Elmar of Benintone [Bennington], had a half-hide and could sell; and a widow had a half-hide all but 10 acres. She could not sell except by leave of Goduin of Laceworde [Letchworth].

IN RODEHANGRE []³ Lovet holds of Geoffrey 1 virgate. There is land for 2 oxen (to plough). It has always been worth 44 pence. Alwin, a sokeman of king Edward's, held this land and could sell, and he gave of custom to the sheriff 1 penny.

IN EDWINESTREU [EDWINSTREE] HUNDRET

IN BERLAI [Barley] Ansfrid holds of Geoffrey 20 acres. There is land for 2 oxen (to plough). It has always been worth 3 shillings. This land Algar, one of Wigar's men, held and could sell.

IN COCHENAC [Cockenhatch in Barkway] Ansfrid holds of Geoffrey 1 hide and 12 acres. There is land for 4 ploughs. On the demesne are 2, and there 1 villein and (*cum*) 8 bordars have 2 ploughs between them. There are 6 cottars and 1 serf. Meadow is there sufficient for 1 plough team, woodland to feed 50 swine. This manor is worth 60 shillings; when received it was worth 40 shillings; T.R.E. 100 shillings. Algar, one of Wigar's men, held this land and could sell.

IN THE HALF-HUNDRET OF HIZ [HITCHIN]

IN HEGESTANESTONE [Hexton] Ralf holds of Geoffrey 1 hide.⁴ There is land for 1 plough and a half-plough. A half-plough is there, and another plough could be added. There are 2 bordars. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock. There are 2 cottars, and 1 mill worth (*de*) 40 pence. This land is worth 30 shillings; when received 10 shillings; T.R.E. 40 shillings. Alric, one of Asgar the staller's men, held this land and could sell. The soke remained in Hiz [Hitchin], and

¹ See p. 308, note 4.

² In Stevenage. See Introduction, p. 298.

³ See, for this place and its probable locality, *Anecdota Oxoniensia* (Mediæval and Modern Series), vii. 133-4.

⁴ See Introduction, p. 273.

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there (it ¹) found 1 'avera' (the carrying of 1 load).

Geoffrey himself holds LINLEI [Lilley]. It is assessed at 5 hides.² There is land for 9 ploughs. In the demesne are 2 hides, and there are 3 ploughs on it. There 19 villeins and (*cum*) a priest have 5 ploughs, and a sixth could be added. There are 6 bordars and 4 cottars and 6 serfs. Pasture is there sufficient for the live stock, woodland to feed 6 swine. In all the value is and was 100 shillings; T.R.E. 7 pounds. This manor Leueva held of earl Harold; and there 1 sokeman, a man of Harold's, had 3½ virgates of the same land and could sell, and he rendered one 'avera' in Hiz [Hitchin] or else 3 pence and 1 half-penny.

IN HERFORT [HERTFORD] HUNDRET

Geoffrey himself holds HALET [Hailey]. It is assessed at 2 hides. There is land for 2 ploughs. In the demesne are 1 hide and 3 virgates, and on it is 1 plough, and a half-plough could be added. There 2 villeins and (*cum*) 2 bordars have a half-plough. There are 3 cottars and 1 serf. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 50 swine. There (are received) 50 eels from the weir. It is worth 30 shillings; when received it was worth 10 shillings; T.R.E. 4 pounds. Wlwin, one of earl Harold's men, held this land.

Of a certain wood Ralf de Limesi claims that he ought to have as much as belongs to (the) 3 hides of Emmewelle [Amwell] and fo. 140b

he also claims 2 villeins of 1 virgate³ and 1 bordar of 10 acres,⁴ and also 24 acres of land which Ilbert of Hertford⁴ took away and attached to this manor, as the men of the shire-moot (*scira*) attest; and the canons of Waltham claim that they ought to have as much woodland as belongs to 1 hide.

In BRICHENDONE [Brickendon] Isenbard holds of Geoffrey 5 virgates as 1 manor. There is land for 1 plough, and it is there. There is meadow sufficient for 1 plough team, woodland to feed 40 swine. It is and was worth 10 shillings; T.R.E. 40 shillings. Leueron, one of archbishop Stigand's men, held this land and could sell.

¹ The land.

² See Introduction, p. 273.

³ i.e. who held that amount (J.H.R.).

⁴ Formerly sheriff (J.H.R.).

In BELINGEHOU [Bengeo] the same Geoffrey holds 5 hides and 1 virgate as 1 manor. There is land for 5 ploughs. In the demesne are 3½ hides, and 1 plough is on it, and another could be added. There 2 Frenchmen and (*cum*) 2 villeins with 6 bordars have 3 ploughs. There are 34 cottars. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock and (worth) 8 pence (besides), wood sufficient for the fences. In all its value is and was 100 shillings; T.R.E. 8 pounds. Anand, a house-carl of king Edward's, held this manor, and there one sokeman had a half-virgate and could sell.

In the same vill the same Geoffrey holds 6½ hides as one manor. There is land for 8 ploughs. In the demesne are 2½ hides. There 4 knights (*milites*), holding 4 hides, and (*cum*) 2 villeins have 3 ploughs and a half-plough (between them), and 4 ploughs and a half-plough could be added. There are 10 bordars and 5 serfs. Meadow is there sufficient for 3 plough teams, pasture sufficient for the live stock, woodland to feed 30 swine. In all the value is 100 shillings; when received it was 60 shillings; T.R.E. 8 pounds. Elaf, a thegn of king Edward's, held this manor.

In the same vill 3 knights (*milites*) hold of Geoffrey 1 hide and 1 virgate and a half. There is land for 3 ploughs, but there are no ploughs except on the demesne (*dominicæ caruæ*). There are 4 bordars. Meadow is there sufficient for 4 oxen, wood sufficient for the fences. It is and was worth 20 shillings; T.R.E. 40 shillings. This land 3 sokemen held. Two of these, Walcra and Lepsi, had 1 hide belonging to (*de*) the King's soke and gave 4 pence of dues;⁵ the third, Alestan, held 1 virgate and a half belonging to (*de*) the King's soke and paid 3 half-pence.⁵ All however (*vero*) could sell their lands.

In the same vill Roger holds of Geoffrey 5 virgates and a half. There is land for 2 ploughs. One plough is there, and there could be another. There are 4 villeins. It is and was worth 20 shillings; T.R.E. 40 shillings. Four sokemen of king Edward's held this land and could sell, and they paid the sheriff 6 pence yearly.⁵

In the same vill a priest and a Frenchman hold of Geoffrey 3 virgates and a half. There

⁵ These were commutations for 'avera' (carrying service) as explained in the Introduction.

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is land for 1 plough. A half-plough is there, and there could be another half-plough. It is and was worth 5 shillings; T.R.E. 10 shillings. Two sokemen of king Edward's held this land and could sell; they paid 2 pence yearly to the sheriff.¹

In SELA [Sele]² Goduin holds of Geoffrey half a hide. There is land for 1 plough, and it is there, with 2 serfs, and 1 mill worth 2 shillings. Meadow is there sufficient for 1 plough team, there is wood sufficient for the fences, and pasture for the live stock. It has always been worth 10 shillings. The same man held it T.R.E. and could sell.

In ROCHESFORDE [Roxford near Hertingfordbury] Guy the priest holds of Geoffrey half a hide. There is land for 1 plough and a half-plough. On the demesne is 1 plough, and a half-plough could be added. There are 3 bordars, and 1 mill worth 5 shillings. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 50 swine. The total value is and was 15 shillings; T.R.E. 20 shillings. Goduin, a thegn of king Edward's, held this land and could sell.

In BLACHEMENE [Panshanger]³ Geoffrey Runeville holds of Geoffrey 1 hide. There is land for 2 ploughs. On the demesne is 1, and there could be another. There are 1 villein and 2 bordars. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 40 swine. This land is and was worth 15 shillings; T.R.E. 40 shillings. Two thegns of king Edward's held this land and could sell.

IN BRACHINGES [BRAUGHING] HUNDRET

In STANSTEDE [Stanstead (Abbots)] Geoffrey holds of Geoffrey de Bech half a hide. There is land for a half-plough, and this is there, with 1 cottar. Meadow is there sufficient for a half-plough team. This land is worth 10 shillings; when received it was worth 5 shillings; T.R.E. 10 shillings. Bettice, a man of Wlwin of Estewiche

[Eastwick],⁴ held this land and could sell, and paid 2 pence.⁵

In ESTEWICHE [Eastwick] Rainald holds of Geoffrey 2 hides. There is land for 4 ploughs. On the demesne are 3, and 4 villeins and (*cum*) a priest and 2 bordars have 2 ploughs.⁶ There are 5 serfs, and 1 mill worth (*de*) 5 shillings. Meadow is there sufficient for 5 plough teams,⁷ woodland to feed 20 swine. In all the value is 60 shillings; when received it was 40 shillings; T.R.E. 4 pounds. Wlwin, a thegn of earl Harold's, held this land and could sell.

In WICHEHAM [Wickham]⁸ Roger and Osbert hold of Geoffrey 3 virgates and 5 acres. There is land for 1 plough and a half-plough, and these are there, with 8 bordars. Meadow is there sufficient for a half-plough team, woodland to feed 8 swine. Its value is and was 30 shillings; T.R.E. 40 shillings. Three sokemen of king Edward's held this land and could sell, and they paid to the sheriff 3 pence yearly.

XXXV. THE LAND OF GOISBERT DE BELVACO

Goisbert de Beauvais (*Belvaco*) holds WIMUNDESLAI⁹ [Wymondley]. It is assessed at 3 hides and 1 virgate. There is land for 4 ploughs. In the demesne are 2 hides and 2 virgates and a half, and on it there are 2 ploughs, and a third could be added. There are 4 villeins and (*cum*) 3 bordars have 1 plough. There are 4 cottars and 2 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 10 swine. In all the value is 60 shillings; when received it was 20 shillings; T.R.E. 60 shillings. Swen, one of earl Harold's men, held this manor and could sell.

In GRAVELAI [Graveley] the same Goisbert holds 2 hides. There is land for 3 ploughs. In the demesne are 5½ virgates, and there is 1

⁴ See next entry (J.H.R.).

⁵ Evidently to the sheriff as commutation for 'avera' on half a hide (J.H.R.).

⁶ There is thus one more plough (team) than there was land for (J.H.R.).

⁷ Here again the number is 5, which suggests that the '4' ploughlands should be '5' (J.H.R.).

⁸ Wickham Hall in Little Hadham, which was in Edwinstree Hundred (J.H.R.).

⁹ The manors in Broadwater Hundred begin here.

¹ See note 5 above, p. 334.

² A manor now represented by St. Andrews on the west of Hertford.

³ The manors of Blackmere (the above 'Blachemene') and Panshanger were originally distinct.

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plough there, and another could be added. There 3 villeins have 1 plough between them. There are 1 cottar and 1 serf. Pasture is there sufficient for the live stock, underwood ¹ (*rispalia*) for the fences. It is worth 40 shillings; when received 20 shillings; T.R.E. 40 shillings. Swen, one of earl Harold's men, held this manor and could sell.

IN ODESEI [ODSEY] HUNDRET

In WALLINGTON [Wallington] Fulco holds of Goisbert 3 hides and 40 acres of land. There is land for 5 ploughs. On the demesne are 2; and 4 villeins and (*cum*) 3 bordars have 2, and a third could be added. One cottar is there and 2 serfs. Pasture is there sufficient for the live stock, wood sufficient for the fences. In all the value is 50 shillings; when received 30 shillings; T.R.E. 100 shillings. Ederic, one of earl Algar's men, held this manor and could sell. A sokeman, one of the men of Eddeva the fair, held 24 acres of the same land and could sell. Of these earl Ralph had been seized, but he was not seized of them on the day of his forfeiture (*die qua forisfecit*),² according to the testimony of the hundred (court).

XXXVI. THE LAND OF PETER DE VALONGIES

IN BRADEWATRE [BROADWATER] HUNDRET

Peter de Valognes (*Valongies*)³ holds half a virgate in DACEWORDE [Datchworth] and Robert holds it of him. There is land for 2 oxen (to plough), but they are not there. This land is and always was worth 6 shillings. Alstan, a man of Almar of Belintone [Bennington], held this land and could sell.

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In DICHELESWELLE [Digswell] Roger holds of Peter 1 hide. There is land for 3 ploughs. On the demesne is 1, and 5 villeins and (*cum*) 3 bordars have 2 ploughs. There are 8 cottars, and a moiety of a mill (*dimidium molend*) worth (*de*) 40 pence. Meadow is there sufficient for 2 oxen, pasture sufficient for the live stock, woodland to feed 50 swine. In all the value is 35 shillings; when received it was 20 shillings; T.R.E. 50 shillings. Topi, one of Almar's men, held this land and could sell.

¹ This is probably what is meant, but the word '*rispalia*' is difficult (J.H.R.).

² Ralf earl of Norfolk. See the Introduction (p. 296) for his forfeiture (J.H.R.).

³ Sheriff of the shire at the time of Domesday (J.H.R.).

In GRAVELAI [Graveley] Godfrey holds of Peter 2 hides and 1 virgate and a half. There is land for 3 ploughs. On the demesne are 2, and 3 villeins and (*cum*) 4 bordars have 1 plough. There are 2 cottars and 2 serfs. There is pasture sufficient for the live stock, and wood for fences and buildings. It is worth 40 shillings; when received it was worth 10 shillings; T.R.E. 4 pounds. Lemar held this manor of Ælmar of Belintone [Bennington] and could sell.

In ESCELVEIA [? Chells]⁴ Godfrey holds of Peter 1 hide and a half. There is land for 1 plough, and it is there, with 2 bordars and 1 serf. It is worth 30 shillings; when received it was worth 20 shillings; T.R.E. 40 shillings. Of this land Alwin held 1 hide and a half all but 10 acres and 1 toft, which Alwin Dode, a man of Alvic the little, held. They used to belong to (*jacebant in*) Wilga [Welwyn]. He could not sell this land so as to separate it thence (*extra*).

In WLWENEWICHE [Wollenwick]⁵ Roger holds of Peter 1 virgate and a half. There is land for a half-plough, but this is not there. There are 5 cottars. Meadow is there sufficient for 2 oxen, woodland to feed 10 swine. It is and was worth 3 shillings; T.R.E. 10 shillings. Alwin, a man of Ælmer of Belintone [Bennington], held this land and could sell.

In BOXE [Boxbury]⁶ Peter holds 1 hide and 3 virgates. There is land for 2 ploughs. There is 1 bordar. This land belongs to Belintone [Bennington] and is appraised (*appreciata est*) there, and is worked (*colitur*) by his own ploughs.⁷

Peter himself holds BELINTONE [Bennington]. It is assessed at 10 hides. There is land for 11 ploughs. In the demesne are 6½ hides, and on it are 3 ploughs, and there could be 2 more.⁸ There 16 villeins and (*cum*) a priest and 17 bordars have 8 ploughs. There are 1 cottar and 5 serfs. Woodland

⁴ In Stevenage (see p. 333, note 2).

⁵ See Introduction (p. 297) for this lost name.

⁶ In Stevenage.

⁷ *i.e.* those belonging to Peter at Bennington.

⁸ Here is, apparently, a contradiction, for the 11 ploughs existing there are as many as there are said to be land for. But perhaps the excess of demesne ploughs was required for the cultivation of 'Boxe' (see preceding entry), where exactly that excess would be needed (J.H.R.).

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is there sufficient for 100 swine. There is a park for beasts of the chase (*parcus silvaticarum bestiarum*). Altogether it is worth 12 pounds; when received it was worth 6 pounds; T.R.E. 14 pounds. Ælmer of Belintone held this manor.

In STUTEREHELE [Libury¹] 2 sokemen hold of Peter 1 hide and 3 virgates. There is land for 2 ploughs, and these are there, with 1 bordar. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock. Altogether it is and was worth 20 shillings; T.R.E. 40 shillings. One hide of this land was held by Leueron, a man of Elmer of Belintone. He could not sell except by Elmer's consent. And Alwin held 3 virgates; he was the same Ælmer's man, but belonged to king Edward's soke and could sell. He found 3 parts of 1 'avera' ($\frac{3}{4}$ of 1 carrying load) or else 3 pence for the sheriff.

In STUTEREHELE [Libury¹] Peter holds half a virgate and 10 acres. There is land for 3 oxen (to plough). One bordar is there. Woodland is there to feed 4 swine. This land is worth 2 shillings; T.R.E.

² A sokeman of king Edward's held it and could sell. Of custom he rendered the fourth part of 1 'avera' (service of carrying $\frac{1}{4}$ of a load) or else gave the King's sheriff 1 penny yearly.

The aforesaid land Peter the sheriff took from this sokeman of king William into the same King's hands as forfeit for his not having discharged the King's geld. So his men say, but the men of the shire-moot (*scira*) do not bear out the evidence of the sheriff (*non portant testimonium vicecomiti*) because it was always free (*quieta*) of geld and other (dues) to the King (*erga regem*), as long as (the sokeman) held it, according to the testimony of the hundred(-moot).

In the same vill Alward holds of Peter half a virgate. There is land for 1 ox to plough. Its value has always been 16 pence. This land a certain woman held of Almar.

In SEUECHAMPE [Sacomb] Peter holds 9 hides less 1 virgate. There is land for 7 ploughs. In the demesne are 6 hides, and there are 3 ploughs there, and there could be a fourth. There 5 villeins and (*cum*) 6 bordars and 1 cleric have 3 ploughs. There are 6 cottars and 4 serfs, and 1 mill worth (*de*) 20 shillings. Woodland is there to feed 60

swine. In all the value is and was 6 pounds; T.R.E. 8 pounds. Four hides of this manor Elmær held as 1 manor, according to the witness of the hundred (court), and Lewin held 2 hides less 1 virgate as 1 manor. He was a man of earl Harold and could sell. In the manor which Elmer held were 4 sokemen. One of these held $\frac{1}{2}$ hide and could sell; another held 1 virgate, but could not sell without the consent of Elmær, his lord. The third and fourth held $\frac{1}{2}$ hide all but 6 acres and could sell. Over these two king Edward held sake and soke, and each rendered to the sheriff $\frac{1}{4}$ of an 'avera' (carrying of $\frac{1}{4}$ of a load) yearly or 1 penny. These 4 were men of Ælmer of Belintone. In the same manor a certain woman held 5 virgates under Anschil of Waras [Ware], and could sell all except 1 virgate, which she mortgaged (*posuit in vadimonio*) with Almer of Belintone for 10 shillings; and she used to provide 1 'avera' and $\frac{1}{4}$ of another or 5 pence.

IN EDWINESTREU [EDWINSTREE] HUNDRET

In ICHETONE [Layston]³ Humfrey holds of Peter $\frac{1}{2}$ hide. There is land for 1 plough, and this is there, with 2 bordars. Meadow is there sufficient for 2 oxen. This land is worth 15 shillings; when received it was worth 10 shillings; T.R.E. 20 shillings. Elmer of Belintone [Bennington] held this land and could sell.

Peter himself holds STANES [? Stone(bury)].⁴ It is assessed at 1 hide and a half. There is land for a plough and a half-plough. One plough is there, and a half-plough could be added. There are 1 villein and (*cum*) 4 bordars. It is worth 15 shillings; when received it was worth 10 shillings; T.R.E. 40 shillings. Four sokemen held this land; 1 of these, the King's reeve (*prepositus*), had half a hide and took possession of the lands of the other three to the injury of king William, according to the testimony of the whole shire. He used to give of custom yearly 4 pence and 1 half-penny. Peter the sheriff⁵ now holds it.

IN ODESEI [ODSEY] HUNDRET

In ESCEWELLE [Ashwell] Peter holds 2 hides as 1 manor. There is land for 6 ploughs. In the demesne are 3 virgates, and there are on it 2 ploughs; and 8 villeins and

¹ A manor in Little Munden.

² MS. defective (?).

³ See p. 310, note 4.

⁴ Between Layston and Braughing (J.H.R.).

⁵ Peter de Valognes.

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(*cum*) 8 bordars have 4 ploughs. There are 2 cottars and 4 serfs, and 1 mill worth 10 shillings. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock. In all it is worth 100 shillings; when received 60 shillings; T.R.E. 7 pounds. This manor was held by Elmer of Belintone, one of king Edward's thegns.

In HAINSTEWORDE [Hinxworth] the same Peter holds 1 hide and 1 virgate. There is land for 2 ploughs, and these are there. In the demesne is half a hide, and on it is 1 plough; and 1 villein and (*cum*) 4 bordars have 1 plough. There are 2 cottars. Meadow is there sufficient for a half-plough team. It is worth 20 shillings; when received 10 shillings; T.R.E. 30 shillings. This land was a berewick of Escewelle [Ashwell]. Almer held it.

In RADEWELLE [Radwell] Roger holds of Peter 2 hides as 1 manor. There is land there for 3 ploughs. On the demesne are 2; and 5 bordars have a half-plough, and another half-plough could be added. There are 2 serfs, and 1 mill worth (*de*) 6 shillings and 8 pence. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock. Elmer of Belintone [Bennington] held this manor, and his brother held half a hide of the same land. He was Elmer's man and could sell.

IN THE HALF-HUNDRET OF HIZ [HITCHIN]

In FLEXMERE [] Peter holds half a virgate. There is land for a half-plough. There is 1 bordar. Woodland is there to feed 5 swine. It is and was worth 3 shillings; T.R.E. 40 pence. Alvrice, a man of Ælmer of Belintone, held this land and could sell. He rendered 1 'avera' (the service of carrying 1 load) in Hiz [Hitchin].

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In BELINGEHOU [Bengeo] Peter holds 1 virgate. There is land for a half-plough, and this is there, with 1 villein. It has always been worth 5 shillings. Elmer of Belintone, a thegn of king Edward's, held this land.

In TEWINGE [Tewin] Aldene holds of Peter 5½ hides. There is land for 5 ploughs and a half-plough. On the demesne is 1 plough, and there could be another; and 4

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villeins and (*cum*) 5 bordars have 3 ploughs

and a half-plough. There are 5 cottars and 1 serf, and 1 mill worth (*de*) 8 shillings. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 50 swine, and there is a revenue from this of 2 shillings. In all it is worth 60 shillings; when received it was worth 30 shillings; T.R.E. 4 pounds. The same Aldene, a thegn of king Edward's, held this land and could sell. But king William gave the manor to this Aldene and his mother for the soul of Richard his son,¹ as (Aldene) himself says, by his writ to be shown (*per breve suum ostend[endum]*). Peter now says that he holds this manor by gift of the King.

XXXVII. THE LAND OF HARDUIN DE SCALERS

IN BRADEWATRE [BROADWATER] HUNDRET

Harduin de Scalers holds in SUEUECAMPE [Sacomb] 1 hide. There is land for 1 plough, and the plough is there, with 4 villeins. It was and is worth 8 shillings; T.R.E. 20 shillings. Three sokemen held this land. Two of these, men of Anschil of Waras [Ware], held 3 virgates and could sell, and the third, a man of Alvrice Blac, had 1 virgate and could sell. These 3 used to render 1 'avera' or 4 pence yearly to the sheriff.

IN ODESEI [ODSEY] HUNDRET

In LUFENEL [Luffenhall] Tetbald² holds of Harduin half a hide. There is land for 1 plough, but no plough is there, and only 2 bordars. It is and was worth 5 shillings; T.R.E. 10 shillings. Alward, one of earl Algar's men, held this land and could sell.

In CLADHELE [Clothall] Tetbald³ holds of Harduin 1 virgate all but 3 acres. It is and was worth 5 shillings; T.R.E. 10 shillings. Turbert, a priest of archbishop Stigand, held this land and could sell. He found 1 penny.³

¹ See Introduction, p. 298.

² It is remarkable that this tenant, who held so largely under Hardwin in Hertfordshire, appears (as 'Tedbaldus' [or 'Teodbaldus' or 'Theod-baldus'] 'homo Hardewini') among the Domesday jurors for the Cambridgeshire Hundred of Triplow, in which he is not named as a tenant, and which barely touched a corner of Hertfordshire (J.H.R.).

³ *i.e.* the commutation for 'avera' due on one virgate (J.H.R.).

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In WALLINGTON [Wallington] Siward holds of Harduin 1 hide and a half and 26 acres. There is land for 2 ploughs. One is there, and there could be another. There are 3 bordars. It is worth 25 shillings; when received 20 shillings; T.R.E. 30 shillings. Wlwar, a man of Anschil of Ware, held this land and could sell.

In BRADEFELLE [Broadfield] Tetbald¹ holds of Harduin 1 hide and $\frac{1}{4}$ of a virgate. There is land for 1 plough, and it is there, with 3 bordars and 2 serfs and 1 cottar. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock. It is worth 20 shillings; when received it was worth 10 shillings; T.R.E. 40 shillings. This land 2 brothers, archbishop Stigand's men, held and could sell.

In ORDWELLE [Horwell(bury)]² Wisgar holds of Harduin 1 hide and a half less 5 acres. There is land for 1 plough and a half-plough, and these are there, with 1 villein and 3 cottars. There are 2 serfs. No meadow is there; there is pasture sufficient for the live stock. This land is worth 28 shillings; when received it was worth 15 shillings; T.R.E. 25 shillings. Two sokemen, archbishop Stigand's men, held this land and could sell.

In DEREVELDE [Therfield] Wigar holds of Harduin 3 virgates. There is land for 1 plough. There are 2 villeins and 2 cottars and (*cum*) 1 serf. Pasture is there sufficient for the live stock. It is and was worth 10 shillings; T.R.E. 20 shillings. Alric a priest held this land under the abbot of Ramsey [Ramsey]. He could not sell except by the Abbot's leave.

In RETTH [Reed] Harduin holds 5 hides and 1 virgate and a half. There is land for 6 ploughs. In the demesne are $3\frac{1}{2}$ hides and 8 acres, and there are 2 ploughs on it. Ten villeins there and (*cum*) a priest and 5 bordars have 4 ploughs. There are 2 cottars and 6 serfs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 10 swine. In all the value is 100 shillings; when received it was 4 pounds; T.R.E. 6 pounds. Four hides and a virgate and a half of this manor Siret, earl Harold's man, held, and Sinod, a man of St. Mary of Cetriz [Chatteris], held 1 hide. Both could sell.

In ESCREWELLE [Ashwell] Tetbald holds of Harduin half a hide. There is land for 1 plough, but it is not there. There are 6 cottars. Meadow is there sufficient for a half-plough team. This land is worth 20 shillings; when received it was worth 10 shillings; T.R.E. 30 shillings. Uctred held this land under Robert fitz Wimarch; he could not sell except by Robert's leave—so the men of the hundred (court) testify.

In HAINGESTEWORDE [Hinxworth] Tetbald holds of Harduin 2 hides. There is land for 2 ploughs, and these are there, with 5 villeins and a Frenchman and 3 cottars. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock. This land is worth 40 shillings; when received 20 shillings; T.R.E. 60 shillings. Six sokemen held this land. Of these, 4 were men of Almer of Belinton, and held 1 hide and 1 virgate and used to render 5 pence yearly;³ the fifth, one of archbishop Stigand's men, had half⁴ (a hide); the sixth, a man of king Edward's, had 1 virgate and rendered 1 penny.⁵ All these could sell.

In EDWINESTREU [EDWINSTREE] HUNDRET

In BERLAI [Barley] Tetbald holds of Harduin 4 hides and 10 acres. There is land for 3 ploughs and a half-plough. On the demesne are 2, and 3 villeins and (*cum*) a priest and 8 bordars have 1 plough and a half-plough. There are 4 cottars and 2 serfs. In all the value is 45 shillings. When received it was 15 shillings; T.R.E. 60 shillings. Five sokemen held this manor. Three of these, earl Algar's men, had 1 hide and 10 acres; the fourth, one of earl Guert's⁶ men, had 2 hides; the fifth, one of earl Harold's men, had 1 hide. All these could sell.

In BERCHEWEI [Barkway] 2 men hold of Harduin 1 virgate and a half. There is land for 1 plough, but it is not there, and there is only 1 cottar. This land is and was worth 7 shillings; T.R.E. 10 shillings. Two sokemen held this land. One of these, earl Algar's man, had 1 virgate; the other, Eldret's man, held a half-virgate; he paid 1 half-penny yearly. He could sell.

In HELSANGRE [] 3 men hold of Harduin 2 thirds (*partes*) of 1 hide. There is land for 1 plough, and this is there. This

¹ See note above, p. 338.

² A manor in this Hundred.

³ Commutation for 'avera' (J.H.R.).

⁴ MS. defective.

⁵ Harold's brother Gyrth (J.H.R.).

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land is worth 10 shillings; when received it was worth 5 shillings; T.R.E. 20 shillings. Ordmer, a man of the abbot of Ramsey [Ramsey], held this land and could sell.

Harduin himself holds WIDIHALE [Widiall]. It is assessed at 5½ hides. There is land for 8 ploughs. In the demesne are 2 hides less 20 acres, and on it there are 3 ploughs. Eleven villeins and (*cum*) a priest and 5 bordars have 5 ploughs. There are 4 cottars and 6 serfs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, wood for the fences. In all it is worth 9 pounds; when received it was worth 6 pounds; T.R.E. 10 pounds. Nine sokemen held this manor. One of these, Sired, a man of earl Harold's, had 1 hide and 3 virgates as 1 manor, and Alward, one of earl Algar's men, held 1 hide and a half as 1 manor. The other 7, king Edward's sokemen, held 2 hides and 1 virgate. These found for the sheriff yearly 9 pence or the carrying service of 2 loads (*II averas*) and the fourth part of 1 load (*I averæ*).

In ODENHOV [Hodenhoe]¹ Tetbald holds of Harduin 1 hide and 1 virgate. There is land for 1 plough, and it is there, with 1 bordar. There is wood for the fences. This land is worth 20 shillings; when received it was worth 10 shillings; T.R.E. 25 shillings. This land 2 sokemen, men of earl Algar's, held and could sell.

In TROCHINGE [Throcking] Tetbald holds 1 hide and 1 virgate of Harduin. There is land for 1 plough and a half-plough, and these are there, with 2 bordars and 1 sokeman 'of 3 virgates.'² There are 6 cottars and 2 serfs. Meadow is there sufficient for 6 oxen, pasture sufficient for the live stock, wood for the fences. In all it is worth 25 shillings; when received it was worth 10 shillings; T.R.E. 25 shillings. Two sokemen held this land, archbishop Stigand's men, and they could sell.

In ICHETONE [Layston]³ Tetbald holds of Harduin 3 virgates and 6 acres. There is land for 1 plough, and this is there, with 1 villein and 6 bordars and 1 cottar. Meadow is there sufficient for 5 oxen, pasture sufficient for the live stock. It is worth 15 shillings; when received it was worth 10 shillings; T.R.E. 20

shillings. Two sokemen of king Edward's held this land and could sell, and they paid to the sheriff 3 pence yearly.

In WACHELEI [Wakeley Farm] Tetbald holds of Harduin 40 acres. There is land for 1 plough, and this is there, with 7 cottars. Meadow is there sufficient for 2 oxen, wood for the fences. This land is worth 15 shillings; when received it was worth 7 shillings; T.R.E. 15 shillings. Edric, one of earl Algar's men, held this land and could sell.

In BERCHEDENE [Barksdon (Green)]⁴ Peter and Tetbald hold of Harduin 1 virgate. There is land for 1 plough, and this is there, with 2 bordars. Meadow is there sufficient for 2 oxen. It has always been worth 10 shillings. Three sokemen held this land. One of these, a man of Eddeva the fair, had a quarter of a virgate; another, a man of Algar, had a fourth part (of a virgate) in like manner; the third, a man of Guerd's,⁵ had a half-virgate and could sell. Three-quarters (*partes*) of this virgate count Alan claims as his rightful possession, for he was seized of it when last he crossed the sea, as the men of the hundred testify in support of his claim (*sibi portant testimonium*). But Harduin claims Peter the sheriff as warrantor (*protectorem*) and as having given him seisin (*liberatorem*) by order of the bishop of Bayeux (claiming) that (*quod*) he gave him livery of it in exchange for Suterehele.

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In ANESTEI [Anstey] Payn holds of Harduin half a hide. There is land for 1 plough and a half-plough, and these are there, and (*cum*) 4 bordars and 4 cottars and 1 serf. Meadow is there sufficient for a half-plough, pasture sufficient for the live stock, woodland to feed 12 swine. This land is worth 20 shillings; when received it was worth 10 shillings; T.R.E. 20 shillings. Alward, one of earl Algar's men, held this and could sell.

IN HERFORD [HERTFORD] HUNDRET

Harduin himself holds BERCHEHAMSTEDE [Little Berkhamstead]. It is assessed at 5

⁴ In Aspenden.

⁵ There can be no doubt, on comparing the Barley entry above, that these lords were earl Ælfgar and earl Gyrth of the rival houses of Mercia and Wessex, though the scribe has omitted to interline 'com[es]' above them respectively (J.H.R.).

¹ In Buckland.

² *i.e.* who held that amount (J.H.R.).

³ See p. 310, note 4.

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hides. There is land for 8 ploughs. In the demesne are 3 hides, and there are 2 ploughs on it, and a third could be added. Six villeins there and 5 bordars have 4 ploughs, and a fifth could be added. There are 6 cottars and 1 serf. Meadow is there sufficient for 3 plough teams, woodland to feed 50 swine. In all it is worth 100 shillings; when received it was worth 50 shillings; T.R.E. 100 shillings. Two hides of this manor Semar a priest held, and a widow, Leuefa, held 2 hides. Wlfric Werden' held 1 hide. These lands belonged to the 'alms' (*fuerunt de elemosina*) of king Edward and all the Kings his predecessors, as the shire-moot (*scira*) testifies.

Harduin himself holds BRANDEFELLE [Bramfield]. It is assessed at 5 hides. There is land for 6 ploughs. In the demesne are 4 hides, and there are on it 1 plough and a half-plough, and another half-plough could be added. Ten villeins there have 2 ploughs and a half-plough, and there could be another plough and half-plough. There is 1 serf. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 100 swine and from it is (also) a revenue of 12 pence. In all it is worth 4 pounds; when received it was worth 40 shillings; T.R.E. 100 shillings. Achi, one of earl Harold's thegns, held this manor and could sell.

In BRICEWOLD [] Baldwin holds of Harduin 3 virgates. There is land for 2 ploughs. One is there, and there could be another. There are 2 villeins and 3 bordars. Meadow is there sufficient for 4 oxen, woodland to feed 15 swine. This land is worth 5 shillings; when received it was worth 10 shillings; and 10 shillings also T.R.E.

XXXVIII. THE LAND OF EDGAR ADELING

IN EDWINESTREU [EDWINSTREE] HUNDRET

Edgar the Ætheling [*Adeling*]¹ holds in BERCHEWEI [Barkway] and Goduin holds of him 1 hide and a half. There is land for 2 ploughs. On the demesne is one plough, and 4 bordars and (*cum*) 4 cottars have 1. There is 1 serf. Pasture is there sufficient for the live stock, woodland to feed 15 swine. This land is worth 40 shillings; when received 10 shillings; T.R.E. 40 shillings. Two sokemen, Asgar the staller's men, held this and could sell.

¹ See Introduction for Edgar and for Godwine.

The same Goduin holds HOREMEDE [Horemead] of Edgar. It is assessed at 6 hides and 3 virgates. There is land for 10 ploughs. On the demesne are 4, and there could be a fifth. There 6 villeins and (*cum*) 15 bordars have 5 ploughs between them. There are 2 cottars and 6 serfs. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 24 swine. In all it is worth 8 pounds; when received it was worth 6 pounds; T.R.E. 12 pounds. Of this manor Alnod, a thegn of archbishop Stigand's, held 1 hide and a half as 1 manor, and Ulwin, one of Asgar the staller's men, had 1 hide, and Alward, a man of Almar of Belintone, 1 hide, and 7 sokemen of king Edward's held 3 hides and 1 virgate and paid the sheriff 13 pence yearly. All these could sell their land. These 7 sokemen and Ulwin and Alward were attached (*apposuit*) by Ilbert the sheriff to this manor in king William's time. They did not belong to it (*non fuerunt ibi*) in king Edward's time—so the hundred (court) testifies.

XXXIX. THE LAND OF MANNO THE BRETON

IN TREDUNGE [TRING] HUNDRET²

Maino the Breton holds in DENESLAI [Dunsley in Tring] a third part of 1 hide. There is land for 1 ox (to plough). It has always been worth 12 pence. Engelric held this T.R.E., and it belonged to (*jacuit in*) Tredunge (Tring), and is part of the 7 hides which the count of Mortain took (*assumpsit*).

XL. THE LAND OF GILBERT SON OF SALOMON

Gilbert son of Salomon holds MAPERTESHAE [Meppershall].³ It is assessed at 3 hides and 1 virgate. There are 3 villeins and 4 cottars there. This land is appraised (*est apreciata*) in Bedfordshire with (his) other land. Lewin,⁴ a thegn of king Edward's, held this land.

² Now part of Dacorum Hundred.

³ In Bedfordshire. But part of it was, including St. Thomas' Chapel, a detached portion of Hertfordshire. It remained to our own times assessed for land tax and income tax in Hertfordshire, though for all other purposes in Beds (J.H.R.).

⁴ This was Leofwine Cilt. See Introduction, p. 281.

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XLII. THE LAND OF SIGAR DE CIOCHES

IN ODESEI [ODSEY] HUNDRET

Sigar de Cioches holds RISENDENE [Rushden]. It is assessed at 5 hides. There is land for 8 ploughs. In the demesne are 3 hides, and 2 ploughs are on it, and there could be a third. There 8 villeins with 3 bordars have 5 ploughs. One sokeman is there and 3 cottars and 4 serfs. Meadow is there sufficient for a half-plough team, pasture sufficient for the live stock, woodland to feed 50 swine. In all it is and was worth 110 shillings; T.R.E. 10 shillings.¹ Two sokemen, archbishop Stigand's men, held this manor and could sell.

In BRADEFELLE [Broadfield] Sigar holds 1 hide and 3 quarters (*partes*) of 1 virgate. There is land for 2 plough teams. One is there, and another could be added. There are 4 villeins and (*cum*) 2 bordars. Meadow is there sufficient for a half-plough team, pasture for the live stock, woodland to feed 50 swine. Altogether it is and was worth 30 shillings; T.R.E. 60 shillings. Ansgot, a man of archbishop Stigand's, held this land and could sell.

XLII. THE LAND BELONGING TO THE KING'S THEGNS

IN BRADEWATRE [BROADWATER] HUNDRET

Derman and Alward hold WODTONE [Watton] of the King. It is assessed at 5 hides. There is land for 7 ploughs. In the demesne are 3½ hides, and 2 ploughs are on it, and a half-plough could be added. There 10 villeins with 4 bordars have 4 ploughs and a half-plough. There are 4 serfs, and 1 mill worth 13 shillings and 4 pence. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland to feed 100 swine. Its total value is and was 100 shillings; T.R.E. 7 pounds. Alwin Horne, a thegn of king Edward's, held this and could sell.

Derman himself holds WALCHRA [Walkern]. It is assessed at 10 hides. There is land for 12 ploughs. In the demesne are 5 hides, and there are 2 ploughs on it, and there could be 2 others. There 14 villeins and

(*cum*) 1 priest and 6 bordars have 8 ploughs. There are 8 cottars and 4 serfs. Pasture is there sufficient for the live stock, woodland to feed 200 swine. Its total value is 10 pounds; when received it was worth 8 pounds; T.R.E. 16 pounds. Alwin Horne, a thegn of king Edward's, held this manor and could sell.

In STUTEREHELA [Libury²] Derman holds 3 virgates. There is land for 1 plough, but the plough is not there. This land is appraised (*appreciata est*) in Watone [Watton], Derman's manor.

In the same vill Derman holds 3 acres. They have always been worth 3 pence.

In SUEUECHAMP [Sacomb] Derman holds a half-virgate. There is land for 2 oxen to plough. It has always been worth 12 pence. This land and the others aforesaid Alwin Horne, a thegn of king Edward's, held and could sell.

IN HERFORD [HERTFORD] HUNDRET

In WERMELAI [Wormley] Alwin Dodesone holds 2½ hides of the King. There is land for 2 ploughs, and these are there, with 6 villeins and 1 serf. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 150 swine. Its total value is 40 shillings; when received it was 50 shillings; T.R.E. 60 shillings. This manor Wlward, one of Asgar the staller's men, held and could sell. This manor was sold for 3 marks of gold³ after king William came.

Peter, a burgess, holds 2 hides of the King in DODESDONE [Hoddesdon? ⁴]. There is land for 1 plough and a half-plough, and these are there, with 1 villein and 3 cottars and 2 serfs. Meadow is there sufficient for 2 plough teams, pasture sufficient for the live stock, woodland to feed 10 swine. Its value in all is 20 shillings; when received 10 shillings; T.R.E. 30 shillings. Goda,⁵ a 'man' of queen Eddid's, held this manor and could sell.

Baldwin, a certain serjeant of the King (*serviens*), holds 3 virgates in BRICHEDONE [Brickendon]. There is land for 1 plough,

² In Little Munden.

³ £18 (J.H.R.).

⁴ The abundance of meadow implies that the place was on a stream (J.H.R.).

⁵ Goda is a woman's name (J.H.R.).

¹ So in MS., but the figures are abnormal and therefore suspicious. Probably *sol* is a scribal error as on p. 317 (J.H.R.).

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and this is there. Woodland is there to feed 40 swine. This land is and was worth 10 shillings; T.R.E. 15 shillings. Three brothers held this land and could sell.

In BRICEWOLDE [] a priest and his sister hold of the King 3 virgates. There is land for 2 ploughs. One is there, and there could be another. There are 1 villein and 1 cottar. Meadow is there sufficient for 4 oxen, woodland for 15 swine. This land is worth 5 shillings; when received it was worth 10 shillings; and as much T.R.E. The same persons held it T.R.E. They were of the King's soke and could sell.

In THEPECAMPE [Epcombe?]¹ a priest holds of the King's 'alms' half a hide. There is land for 1 plough, and the plough is there, with 2 serfs. Meadow is there sufficient for 1 plough team, and 1 mill is there worth (*de*) 12 pence. This land is and was worth 15 shillings; T.R.E. 20 shillings. The same man held it T.R.E. and still holds it in almoil.

In BRADEWATRE [BROADWATER] HUNDRET

In WELGE [Welwyn] a priest holds 1 hide in 'alms' of the King. There is land for 3 ploughs. On the demesne is 1, and another could be added. Six bordars there have 1 plough. There are 2 cottars. Meadow is there sufficient for 1 plough team, pasture sufficient for the live stock, woodland for 50 swine. Its total value has always been 25 shillings. The same man held it of king Edward in almoil and it belongs to the church

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of the vill. Twelve acres of this almoil William Blach, a man of the bishop of Bayeux, occupied (*invasit*) to the King's injury (*super regem*), as the hundred (court) attests.

In AIETE [Ayot] the reeve (*prepositus*) of this hundred holds 9 acres of the King. There is land for 1 ox (to plough). It has always been worth 9 pence. This land Siward, a man of Alwin of Godtone, held and could sell.

In RODENEHANGRE []² Alward of

¹ On the stream, just to the north of Hertingfordbury. Mr. Page has suggested this identification to me, and the sufficiency of meadow favours it (J.H.R.).

² See p. 333, note 3 above.

Merdelai [Mardleybury]³ holds 3 virgates of the King. There is land for 1 plough, but it is not there, and only 1 cottar. Woodland is there to feed 24 swine. This land has always been worth 5 shillings. The same man held it T.R.E. and could assign (*dare*) it to whom he wished. He paid 3 pence yearly to the sheriff.

In SUEUECHAMP [Sacomb] a King's sokeman holds a half-virgate. There is land for 2 oxen (to plough). It has always been worth 15 pence. The same man held it T.R.E. He was one of earl Lewin's men. He paid of custom 1 half-penny yearly.

In BRACHINGES [BRAUGHING] HUNDRET

In STANESTEDE [Stanstead] Godmund holds 3 virgates of the King. There is land for 6 oxen (to plough), and these are there, with 4 bordars. Meadow is there sufficient for 1 plough team, woodland to feed 8 swine. This land has always been worth 10 shillings. The same man held it of king Edward and could sell.

XLII. THE LAND OF RICHARD FITZ GILBERT'S WIFE

In BRACHINGES [BRAUGHING] HUNDRET

Rothais, wife of Richard son of count Gilbert,⁴ holds STANDONE [Standon]. It is assessed at 11 hides. There is land for 24 ploughs. In the demesne are 6 hides, and on it are 5 ploughs. There 29 villeins with a priest and 15 bordars and 2 sokemen and a Frenchman have 12 ploughs (between them), and there could be 7 more ploughs. There are 9 cottars and 8 serfs, and 5 mills worth (*de*) 45 shillings. Meadow is there sufficient for 24 plough teams, pasture sufficient for the live stock, woodland to feed 600 swine. There are 2 arpents of vineyard. Its total value is 34 pounds; when received it was 16 pounds; T.R.E. 34 pounds. Archbishop Stigand held this manor. In this manor were 6 sokemen, men of the same Archbishop, and each had 1 hide and could sell (the land) but not the soke. One of them however could also sell his soke with the land.

³ See p. 323, note 3 above.

⁴ *Alias* Richard, 'de Tonbridge' or 'de Clare' (J.H.R.).

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XLIII. THE LAND OF HUGH DE GRENTEMAISNIL'S WIFE

IN HERTFORD HUNDRET

Adeliz, wife of Hugh de Grentmaisonil, holds BROCHESBORNE [Broxbourne]. It is assessed at $5\frac{1}{2}$ hides. There is land for 6 ploughs. In the demesne are 3 hides and 3 virgates, and 1 plough is on it. There 4 villeins and (*cum*) a priest and 1 sokeman and 2 bordars have 5 ploughs. There are 2 serfs, and 1 mill worth 8 shillings. Meadow is there (producing) 6 shillings and 4 pence from the hay, pasture is there sufficient for the live stock, woodland to feed 200 swine. The total value is 4 pounds; when received it was 60 shillings; T.R.E. 7 pounds. Archbishop Stigand held this manor, and there was 1 sokeman, man and reeve (*prepositus*) of the same Archbishop. He had half a hide and could sell.

XLIV. THE LAND OF THE DAUGHTER OF RALPH TULGEBOS

IN BRACHINGES [BRAUGHING] HUNDRET

The daughter of Ralf Tailgebosch holds in HODESDONE [Hunsdon] 4 hides of the fee

of Hugh de Beauchamp (Belcamp). There is land for 5 ploughs. In the demesne are 2 hides, and there is 1 plough, and another could be added. There 4 villeins with a priest and a Frenchman and 8 bordars have 2 ploughs (between them), and there could be a third. There are 2 cottars and 3 serfs, and 1 mill worth (*de*) 10 shillings. Meadow is there sufficient for 5 plough teams, pasture sufficient for the live stock, woodland for 40 swine, and 10 pence from the pannage. The total value is and was 70 shillings; T.R.E. 6 pounds. Lewin, one of earl Harold's men, held this manor and could sell, and of this land Alwin of Godton, a man of king Edward's, held 1 hide and could sell. Ralf Tailgebosc took it from Stanestede [Stanstead Abbots] and attached it to this manor.¹

¹ See p. 326, note 7 above, where it is shown that this hide is there stated by the Survey to have been attached to 'Honesdone.' As Hoddesdon is in the Hundred of Hertford, while Hunsdon is in that of Braughing, and, moreover, adjoins Stanstead, there can be no question that the scribe has written 'Hodesdone' for 'Honesdone' in this entry by mistake. Confirmation is afforded by the fact that in the thirteenth and fourteenth centuries lands are found in Hunsdon held of the Beauchamp fee (J.H.R.).

SPORT ANCIENT AND MODERN

THE county of Hertford has from the earliest times of British history been an important centre of sport. It contained many large forests which formed ideal strongholds for all beasts of the chase.

Hunting is the oldest form of sport. In the earliest times dogs were used for chasing wolves and other beasts of prey, as well as to catch animals suitable for food, such as deer, hares, rabbits, etc. The earliest treatise in England on hunting was written in French by William Twici, huntsman to Edward II. which was referred to as having been seen by Strutt in the Cotton Library at the British Museum. The next, called *The Maister of the Game*, was written by the Duke of York, son of Edward III. who was noted for his skill and delight in hunting and hawking. After which we have the well-known work on hunting and hawking, called *The Boke of St. Albans*, written by Dame Juliana Berners, a prioress of Sopwell nunnery, which was printed and published at St. Albans in the year 1466, therefore one of the earliest books printed in England, and certainly the earliest printed book on sport. Whether or no it was really written by a lady, the author exhibits great knowledge of the art of hunting and hawking, and it was undoubtedly written and printed by some one connected with the abbey of St. Albans, to which Sopwell nunnery was a cell. Britain has ever since remote ages been justly celebrated for her hardy race of hunters and for the excellence of her sporting hounds.

Elizabeth's celebrated minister, Lord Burghley, was a sportsman with a keen eye for a good hound, and hunted in this county. Writing from Theobalds, in 1580, to Leicester, he thanks him for a hound, observing, 'she maketh my hunting very certain; she hath never failed me, and this last week brought me to a stag which my-

self had stricken with my bow being forced to soyle when with the help of a water spaniel your good brache helped to pluck her down.'

In pre-Norman times the nobles were less restricted in sporting on their own lands than they were after the Conquest, for William I. introduced game laws of a much more stringent nature and arrogated to himself the entire right of hunting, not only in his own forests but over all the lands of his subjects. Sporting rights, hampered by many restrictions as to the number of days and the head of game, were but sparingly granted by him to a few of his most powerful subjects, both lay and clerical; and the breaking of the forest laws was punishable by severe penalties.

William the Conqueror granted 'free warren' (i.e. the right of taking hares, conies, partridges and pheasants) to the abbots of St. Albans, Ely and Westminster, over many of the manors in Hertfordshire; indeed, the abbots of St. Albans claimed the right of 'free warren' over all the lands they possessed. The king's claims to the sporting rights over the lands of his subjects became in course of time a great hardship, as owners of property never knew when the king would swoop down and take possession of their property without compensation. The 'Charta de Foresta,' which was granted by John's successor, was therefore hailed with delight by the people of England, and was almost of as much benefit to them as the 'Magna Charta' had been. It limited the king's right of hunting over other people's land to the king himself, instead of allowing him to pass on his right to the nobles, abbots and other gentlemen of his court. It also provided compensation to the people whose lands were forcibly taken from them in order to form a chase or hunting forest.

A HISTORY OF HERTFORDSHIRE

Nearly all the great lords in Hertfordshire, both ecclesiastical and lay, preserved the sporting rights in their manors, and we find frequent references in the manorial court rolls of the county to the fining of persons for poaching on such rights.

Only three parks were mentioned in the Domesday Book as existing in Hertfordshire at that time, one at St. Albans, one at Ware, and one at Bennington, none of which is now in existence nor were any of them named by Norden who wrote in 1596. They were most probably large hunting parks made by William the Conqueror. Amongst the parks in Hertfordshire, named by Norden, were two at Hatfield, the Home and Middle park (now corrupted into Milwards), in one of which red deer were kept and in the other fallow deer. There were also parks in Norden's time at Woodhall, Brocket Hall, Ponsbourne, Tyttenhanger, Shenley, Bedwell and Cheshunt, all in the neighbourhood of Hatfield. Shirley also mentions old parks in other parts of Hertfordshire, at Theobalds, Cassiobury, Grove, Kings Langley (founded by Henry III.) Berkhamstead, Penley, Walkern, Knebworth, Hunsdon. Ashridge Park is marked on the map of 1700, and Gorhambury Park existed before Chauncy's time.

The large parks where hunting was enjoyed by the kings were all destroyed during and after the Rebellion in 1641. Most of those named above were for the preservation of fallow deer, which were much prized as delicious for the table and were occasionally shot with bows and arrows for sport; other kinds of smaller game such as hares, rabbits, pheasants and partridges were also strictly preserved in these parks.

Queen Elizabeth, who was a notable huntress, while at Hatfield, had a large stable of horses, some of which were kept entirely for her Majesty's personal use when buck hunting. The great park at Hatfield at that date extended all the way to Theobalds, which was close to Cheshunt, thus affording an extensive range of sporting ground which her Majesty was pleased to use freely, for she is reported to have spent most of her leisure there in field sports.

The first authentic accounts of hunting in Hertfordshire were written in her time. In Nichol's *Progress of Queen Elizabeth*, many stories are told of her prowess in hunting. In 1557 she was escorted from Hatfield to Enfield Chase by a retinue of twelve ladies in white satin on ambling palfreys, and 120 yeomen in green on horseback, so that she might hunt the hart. On entering the chase

she was met by fifty archers in scarlet, boots and yellow caps, armed with gilded bows, each of whom presented her with a silver-headed arrow winged with peacocks' feathers. When the buck was taken the queen was pleased to be allowed the privilege of cutting his throat. When she was over sixty-seven years of age she 'was well and excellently disposed to hunting, for every second day she is on horseback and continues the sport long.'

James I. was devoted to every kind of sport. He owned two hunting palaces in Hertfordshire, one at Theobalds, which was owned by Lord Salisbury and exchanged by him for Hatfield House.¹ The second hunting palace, and his more favourite one because of its greater distance from London, was at Royston, where he spent a great portion of his time undisturbed by State affairs. The State papers of his reign are full of letters, commissions, grants and orders issued at Royston, some complaining of his neglect of the affairs of the country while he was at Royston with 'his hunting crew.'

In a letter from Edmund Lascelles to the Earl of Shrewsbury (December 4, 1604), the following anecdote is related. 'There is no news here but a reasonable pretty jest is spoken that happened at Royston. There was one of the King's special hounds called Jowler missing one day. The King was much displeased that he was wanting, notwithstanding went hunting. The next day when they were on the field, Jowler came in amongst the rest of the hounds, the King was told of him and was very glad; and looking on him he spied a paper about his neck and in the paper was written, "Good Mr. Jowler, we pray you speak to the King (for he hears you every day and so doth he not us) that it will please his Majesty to go back to London for else the country will be undone; all our provision is spent already and we are not able to entertain him longer." It was taken for jest and so passed over, for his Majesty intends to lie here yet a fortnight.'

His Majesty was apparently not a daring rider, for an order was given on October 12, 1617, at Royston, to the constables of Sandon, Kelshall and other towns in Hertfordshire, as follows: 'The King's express command is that they give notice to occupants of arable

¹ The preamble of the Act of Parliament for the exchange states that Theobalds 'is a desirable place from its nearness to London and to His Majesty's forests of Waltham Chase and Parks of Enfield, with the commodities of a navigable river falling into the Thames is a place so convenient for His Majesty's Princely sports and recreation.'

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land not to plough their land in narrow ridges, nor to suffer swine to go abroad unringed and root holes, to the endangering of his Majesty and the Prince in hawking and hunting; they are also to take down the high bounds between lands, which hinder his Majesty's ready passage.' How many masters of hounds would welcome those royal rights in these days and avail themselves of the power to order the removal of that curse of modern hunting—wire.

An interesting description of a hunt at Theobalds is translated from the French in *England as Seen by Foreigners*. In 1613 the Duke of Saxe Weimar visited James I. at Theobalds, and the following account was published in 1620: 'The King and the Prince then went down and out through the pleasure grounds where horses and carriages were waiting. When they came to the hunting ground they all mounted horses. The hunt generally comes off in this way: the huntsmen remain on the ground where the game is to be found with twenty or thirty dogs; if the King fancies any in particular among the herd, he causes his pleasure to be signified to the huntsmen, who proceed to mark the place where the animal stood; they then lead the dogs thither, which are taught to follow this one animal only, accordingly away they run straight upon his track; and even if there should be forty or fifty deer together they do nothing to them but only chase the one and never give up until they have overtaken it and brought it down. Meanwhile the King hurries incessantly after the dogs until they have caught the game. His Majesty now and then uses long bows and arrows and when he is disposed shoots a deer.' The duke does not appear to have been imbued with the spirit of the sport, for he adds, 'It was not a very interesting form of amusement,' which reminds one of the question of Lord Chesterfield and *Don Juan*, 'Does any one go out hunting a second time?' King James wrote for his son in a book called *The King's Christian Dutie*, 'I cannot omit here hunting, namely with running hounds which is the most honorable and noblest thereof: for it is a thievish form of hunting to shoot with guns or bows, and greyhound hunting is not so martial a game.'

The palace of Theobalds was a very fine house. It contained a gallery in which were 'divers large stags' heads which were an excellent ornament to the same.' King James I. had enclosed the park of 2,500 acres with a brick wall ten miles in extent, the deer in which were valued at £1,000, rabbits at £15, and timber at £5,239, irre-

spective of 15,000 trees which were marked for the navy. Lord Falkland of Aldenham lost his life here by falling from a 'stand' while hunting with the king.

Besides staghounds and harriers we find other hounds in requisition when James I. was king. On November 10, 1604, a commission was issued by John Parry, master of the Herts otter hounds, to take dogs up the rivers for the king's diversion; and millers were commanded to stop their watercourses during the hunting. In 1607 a grant was made by the king to Henry Mynours, master of the otter hounds at Theobalds to take hounds, beagles, spaniels and mongrels for his Majesty's disport.

An old distich says—

So many men so many minds,
So many hounds so many kinds.

At that early period the colour of a hound was considered indicative of his qualities. A white hound was looked upon as being good for a stag and excellent at 'stratagems,' but not much to be depended upon when hunting other kinds of game. A black hound generally had a good memory and was not afraid of water. A gray hound was coveted on account of his cunning, but a yellow hound was not much use should his quarry be inclined to turn and twist in the chase. The southern hound was recommended for woodland countries, and was used by those sportsmen who running on foot hunted the hare sometimes for five or six hours on end. The northern or fleet hound on the contrary could compete with horses in pace, and could run a hare down in an hour. Between these two latter in quality and pace we read of the hound 'that was capable of running through thick and thin and not requiring the Huntsman's aid to help him over the ditches' (Daniel's *Sports*).

The old mode of hunting was conducted on quite different lines to those of the present day. Lyemers (or hounds held in a lyem or slip) hunting by scent, were used to rouse the deer, the deer thus moved were either driven into pits or nets, or if they came into the open park greyhounds were let go and so the deer were run down. This style of hunting was changed in James I.'s time into hunting with a pack of hounds by scent, and the old English lyemers were merged into buck hounds, and as deer hunting declined and fox hunting became popular, crosses between the harrier-beagle and bloodhounds produced the present type of foxhound.

The spaniels which were brought to Theobalds for the king's disport were no doubt

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used for finding game for falconers. King James appears to have been devoted to every kind of sport except fox hunting, for he deemed it necessary for the preservation of game to appoint a vermin killer to destroy all foxes, etc. At Royston and at Theobalds he kept cormorants for fishing, and in the State papers we find entries of the appointments of partridge takers, masters of hawks, masters of bulls and bears, votary of birds keeper, ostringers, prickers of harriers, cock masters, etc., etc.

Neither age nor illness deterred King James from his favourite amusements, for we read in a State paper of 1619 that 'the King removed from Royston to Ware being carried part of the way by the guard, in a portable chair, and the rest in a litter; he came next day to Theobalds; weak as he was he would have the deer mustered before him.' And in 1624 he would leave Royston to see some hawks fly at Newmarket, although it was against the orders of his physicians. After his death sport in Hertfordshire seems to have been pursued with less ardour by Charles I.; but he was tenacious of his rights, and called upon the Chief Justice of England to punish severely all persons of inferior rank who killed deer or other game that had escaped from the royal preserves; he also appointed gamekeepers in many counties, including Hertfordshire, to preserve the game (which 'was much destroyed in Herts') for his royal sport. Charles II. also appointed gamekeepers at Royston, and Thomas Ellyot was made master of the harriers with an allowance of £500 a year for keeping the king's harriers.

It is difficult to find any part of the old palace at Royston remaining, and Theobalds House was pulled down in 1641. Thus after the death of the Stuart monarchs Hertfordshire contained no royal residence, and the kings and queens of England ceased to take part in the sports of the county.

The disafforesting of the royal chases and sale of the deer by order of Parliament during the time of the Rebellion, and the gloomy spirit of fanaticism which pervaded the country during the protectorate of Cromwell, did much to make the years following 1640 a blank in the sporting annals of this country; but we gather that hunting, instead of being carried on in a stately and formal manner with all kinds of form and ceremony in enclosed parks as in the days of the Stuarts, gradually became a popular amusement of the nobles, landowners and yeomen of the country; the packs of hounds appear to have been generally of a mixed breed, and were expected to hunt all kinds of game and

vermin. There was probably no public pack of hounds kept in Hertfordshire until about the year 1725, but we read of more than one pack of harriers being kept by private individuals which apparently hunted indiscriminately the hart, the hare or the fox.

There are no records at Hatfield House of the times when Queen Elizabeth lived there, but she is said to have spent nearly all her leisure at this favourite resort in hunting and other field sports. It is also curious that there should be no records or bills or accounts to be found amongst the papers at Hatfield relating to the time when Lady Salisbury was mistress of the foxhounds from 1793 to 1828.

There are however some few records of interest which were made by William, second Earl of Salisbury, who kept in his own handwriting what we should now call a game book. These papers give an accurate record of all the deer killed in the two parks at Hatfield, and the names of the people to whom they were sent as presents. The lists do not distinguish between those that were killed in sport and those killed by the keepers, but we have an entry that one day the earl himself killed thirteen deer. We also find the following in the State papers, July 26, 1636: 'By that time my Lord Salisbury was come in from the killing of a stagge in his woods it being a goodly deer and fatt. My Lord Cottington had it. Then we went to see the deer called, a bow was put into my Lord Cottington's hands, he shot thrice before he killed, all the ladies standing by.'

The following is a bill for the keep of the pack of hounds at Hatfield in 1624—

3 qrs. of oats at 2s. a bushell.
8 live horses at 3s.
6 dead horses at 2s.
1 bushell of bran at 1s. 4d.
6 bullocks livers at 3d.
12 doz. sheeps' feet at 1d. per doz.

This same Lord Salisbury also kept a list of all the deer that were in the two parks at Hatfield. In 1620 there were 336, all being fallow, though previously red deer had been kept in one of the parks. He gave particular instructions as to the necessity of carefully catching the deer that he wished to give away alive, so as not to 'bruise' them. He seems to have purchased in one year six fallow deer from St. James's Park, ten from Hyde Park and ten from Eltham Park.

Although his predecessor had exchanged Theobalds for Hatfield, the second earl appears to have retained the keepership of Theobalds, for we find memoranda relating to the red and fallow deer in Theobalds amongst the papers in the possession of Lord Salisbury



THE MARCHIONESS OF SALISBURY.
From the Painting by Sir Joshua Reynolds at Hatfield.

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at Hatfield. The numbers in 1631 were 706 red deer and 718 fallow deer.

We also find a list of his lordship's horses at Hatfield made in June, 1638; those in the stable were thirty-three, about ten of which were harness horses, and the remainder for riding; and there were some twenty-three more in the park.

The second Earl of Salisbury died in 1668, but his successor kept up the pack of hounds, for we find a letter from Lord Worcester to the marchioness, dated December, 1678, saying he had been asked to send some hounds to Hatfield, and as buck and hares were the only animals hunted there, he proposed to send harriers.

FOX HUNTING

Fox hunting is a comparatively modern sport. Its origin lay in the great damage done by foxes to lambs and poultry, which led to less sportsmanlike methods of dealing with such depredators than are now adopted, for we read of 'a great company of people with dogs of all kinds assembled together to go to such woods and coverts where they thought the foxes were, and so beset the place, some beating the woods, some outside, and some to drive them into the nets.'

About the beginning of 1700 public packs of hounds were kept for hunting the stag, the fox and the hare. The Hertfordshire was one of the first packs of hounds that was kept solely for hunting the fox. It was started in 1725 and Mr. John Calvert was the first master, the first kennels being at Cheshunt and Redbourn. They hunted the present Puckeridge and Hertfordshire countries.

Previous to 1750 a now almost obsolete style of fox hunting probably existed in Hertfordshire, a style which is still in vogue in some parts of the kingdom, but especially in the northern counties. Most country squires, yeomen and farmers kept a foxhound or two, called 'trencher hounds.' With these 'boarded out' hounds an excellent pack was often formed, and capital sport was enjoyed 'at break of day,' such as is commemorated in the good old hunting song, 'D'ye ken John Peel?'

In 1793 Lady Salisbury became mistress of the Hertfordshire Hounds, and during her reign the hounds were called the Hatfield Hounds. Lady Salisbury's fame as a mistress of foxhounds, and as a daring rider and sports-woman, is very remarkable. She enjoyed the distinction of being one of the first English ladies who gained such a reputation. Many are the tales told of her daring exploits and of her hairbreadth escapes in the hunting field. It was usual for Lady Salisbury to drive to the meets in a carriage drawn by four black horses, with an outrider, her hunters being led by a groom who acted as her pilot. When the meet was at Bramingham (which

took place pretty often, as it was her favourite meet) she slept over-night at Mr. Hale's, Kings Walden.

The following notes concerning the hounds are found in old numbers of the *Sporting Magazine*. In the October number for 1793 the following note appears: 'The Marchioness of Salisbury and Mr. Calvert's Hounds (the Puckeridge) have begun to draw the coverts and to draw blood from the cubs in Herts.' Also, 'The proper places for horses to be sent over-night for the Marchioness of Salisbury's Hounds are Hatfield or Waterford (Watford), and for Mr. Calvert's Hounds Ware or Wade's Mill.'

October, 1794. 'A short time since the Marchioness of Salisbury, accompanied by Mr. Hale and Mr. Meynell, one of the oldest foxhunters of the present day, hunted a fox at Hatfield. Reynard contrived, after a run of some length, to evade the hounds; and at length, instead of a fox, it was discovered they had for nearly twenty minutes been running a shepherd's dog, which took refuge in his master's hovel.'

In January, 1796, the Hatfield Hounds had a 'gallant' run. 'Having run a burst of more than an hour, they crossed upon a fresh fox at Bramfield, and clattered him two and a half hours more to earth at Baldock. The two chases, which admitted of no interruption from hard running, were full forty miles in extent. Out of a field of four score only nine were at the finish, at the head of whom was Lady Salisbury.'

A note in the *Sporting Magazine* for January, 1800, states that Lady Salisbury, one of the boldest female riders in the kingdom, relaxes a little with her own foxhounds. Some few years ago she invariably went *over the gate*; she now waits with more prudence till the gate is opened. It was not until Lady Salisbury was seventy-eight years of age that she gave up the hounds and ceased following foxhounds; and even then she said she thought she was good enough to hunt with the harriers. Her end, though a tragic one, did not take place in the hunting field. She

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was burned to death in her dressing room at Hatfield House, on November 26, 1836, at the age of eighty-six.

So long as the Hatfield Hounds existed the kennels were at Hatfield. The three successive huntsmen to the pack were Tyler, Hooper and Wilkinson. They always wore scarlet. But the Hatfield Hunt uniform was unique, being sky blue with black collar and cuffs, and silver buttons bearing the initials 'H.H.' The same button is now worn by the members of the Hertfordshire Hunt, but not the same coat, scarlet having been substituted for sky blue. Lady Salisbury herself wore a bright blue habit with black collar and cuffs and a hunting cap.

Amongst those who hunted with the Hatfield Hounds was the Rev. John Knight, rector of Welwyn and fellow of All Souls. He was popular in his parish as well as in the hunting field, and was celebrated for the thoroughbreds he rode, the way he rode them, the lectures he gave on 'Riding to Hounds,' and for the excellence and fluency of his sermons. The Rev. Lord Frederick Beauclerk, vicar of Kimpton and St. Michael's, St. Albans, was another clerical member of the hunt. He rode regularly also in the hunt steeplechases, in full hunting costume, and won the St. Albans steeplechase with 'The Poet,' a horse that had run third in the St. Leger.

The Duke of Wellington was a frequent visitor at Hatfield 'to enjoy the pleasures of the chase.' On one occasion, in 1819, a shepherd was instructed by his master, who objected to the hounds, to fasten up all the gates on the farm. The duke rode up to one of the gates, and the shepherd refused to let him through. The shepherd went home and told his master that he had stopped the soldier that Bonaparte could not.

Lady Salisbury gave up the hounds to the Herts Hunt Club in 1828, and they were then renamed the Hertfordshire Hounds.

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The country now hunted by these hounds lies in Hertfordshire and Bedfordshire, extending northwards from Elstree, on the borders of Middlesex, to the vicinity of Bedford, where it joins the Cambridgeshire and the Oakley countries; and eastward from the borders of the Old Berkeley, for about twenty-three miles, until it touches the confines of the Puckeridge Hunt. The country for hunting purposes has been described as follows: 'All sorts of fences are encountered in the Hertfordshire country,

which varies much in character, some parts being equal to the shires, while other parts are not. There is a fair proportion of pasture and large areas of plough and woodland.' There are some coverts that the Hertfordshire now shares with the Old Berkeley and others which it hunts jointly with the Puckeridge.

The hunt is well supported by covert owners and farmers, many of the latter being regular followers and nearly all good supporters of the hunt. Two, who still ride to hounds, Mr. Hugh Smyth of Quickswood, aged eighty-two, and William Smith of Hill Farm, Bower Heath, aged eighty-one (who has never missed an opening meet for the last fifty years), are good specimens of the sporting farmers.

The Hertfordshire Hunt Club was established in 1822, and was at first a social club consisting of most of the prominent inhabitants of the county who were interested in any kind of sport. The following are the names of some of the original members who joined the club in 1822: Lords Dacre, Verulam, Clarendon, Cranborne, Lynedoch, Glamis and Frederick Beauclerk, Sir C. Cuyler, Sir Y. Ouseley, Captains Phillimore, Shawe and Cuyler, Mr. Hale of Kings Walden, Messrs. W. Hale, Delmé, S. Smith, Farquhar, Paris, G. S. Marten, Thomas Kinder, Woollam, Lomax, Church, Heathcote, Howard, Gape, Latour, Campbell, Ross, Felix Calvert, Astley-Cooper, Sowerby, Halsey, etc.

The club met once a quarter and had a dinner, very often at Tommy Coleman's at the Turf Hotel, St. Albans, or at the Sun Hotel, Hitchin. In the year 1828 Lady Salisbury presented the Hatfield Hounds to the club, and they formed the nucleus of the present Hertfordshire pack. The club now is limited to the principal covert owners in the Hertfordshire country, and to those who may be elected to the club and are full subscribers to the hunt.

In 1830 Mr. Sebright, son of the well known Sir John Sebright, became master, with Bob Oldaker, son of Mr. Harvey Combe's Old Berkeley huntsman, as his first huntsman.¹ In 1834 Mr. Delmé Radcliffe of Hitchin Priory, the author of the well known book *The Noble Science, or A Few General Hints for the Use of the Rising Generation, especially those of the Hertfordshire Hunt Club*, became master; and he continued to keep the hounds at Kennesbourne Green,

¹ Bob Oldaker was killed by being thrown from a dogcart.

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where they had been established by Mr. Sebright, on the site of the present kennels.

Mr. Delmé Radcliffe, when twenty-eight years of age, formed a clever pack of harriers. These he sold in 1834, when he became master of the Hertfordshire Foxhounds. He proved a most popular master, and greatly improved the pack. He kept a copious diary for nearly sixty years, and during the early part of 1837 had such extraordinary sport that a few extracts are worth quoting.

'January 18, 1837. Met at Lamer Park. Found in Lattimore's Gorse. Ran to Dowdells away for Sherrards, back by Bocket, over the river to Sandridge, thence to Symond's Hyde to Milwards Park, Hatfield, towards Wrotham, and right-handed into Mymms Great Woods. Two and a half hours without a check.

'January 20, 1837. Met at Hexton, found in Bramingham, and had the most brilliant thing ever seen in this county, getting away with the Woburn fox, over the splendid vale of Toddington—six miles in twenty-five minutes—turned to left, and ran into him in one hour and twenty minutes without a check.

'On January 23 met at Market Cell, and had two good runs.' February 13, 15, 24, and March 1 were all good days, and they finished off on March 17 with the celebrated Wendover run, which is thus described in Mr. Delmé Radcliffe's diary—

'March 17. Kennel. A day of unexampled severity. The most extraordinary run upon record in the annals of Herts. Having drawn the Luton country all blank, trotted away at two o'clock to Hamilton's (now Kensworth) Gorse, found, went away instantly at twenty minutes to three to Deadmansea, through the wood and on through Beechwood, Ravensdale and Ashridge, over the common and up to Berkhamstead Castle in fifty-five minutes racing pace; crossed the London and North-Western Railway (then making) beyond Northchurch, swam the canal, and went on the same pace to Tring Park, thence to Aston Turville, close up to Aylesbury, thence to the left by Wendover to Hampden, where, having beaten every horse out of sight, no satisfactory account could be rendered as to the casualty which saved so gallant a fox. (The fox was found dead in a faggot stack next morning). Boxall, the huntsman, killed Burton's mare, tired two others, and did not get beyond the canal at Tring Park. Jem (James Simpkins, the whip), upon Pippin, the Hon. E. Grimston, E. T. Daniel, M. Evans, Hayward of St. Albans and Goddard of Park Street lived the

day through—twenty-six miles at least done in two hours twenty-five minutes. Hounds carried a beautiful head throughout, and only one was missing at the end of the day.'

Ill health was unfortunately the cause of Mr. Delmé Radcliffe's resignation. There is little doubt that his ill health was caused by his devotion to hunting in the winter, and to his anxiety over the publication of his well-known work, *The Noble Science*, but he hunted and rode well to the last year of his life.

Hunting was by no means the only sport in which Mr. Delmé Radcliffe excelled. From the day when at Eton he caught the leviathan trout off the Cobler he was an enthusiastic fisherman; as a game and a pigeon shot he had few equals—he on one occasion, after a five days contest, won the 'All England Stakes'; and as a yachtsman he could hold his own against the best sailors of the day. He kept a few racehorses, and was a good amateur jockey.

Mr. Delmé Radcliffe was succeeded in 1839 by Mr. Brand, afterwards Lord Dacre, who moved the pack to kennels near his residence, The Hoo. Lord Dacre was very fond of hunting. He was a good rider, and rode beautiful thoroughbred horses. Boxall continued as his huntsman for three or four seasons, when Jem Simpkins, who had been whip, succeeded him; but he proved to be as much too slow as Boxall was too quick. In 1857 came Charles Ward, formerly whip to the Cambridgeshire, then called 'Ubiquity Bob,' and generally known as 'Bob' Ward. He had commenced with squire Osbaldeston when he had the Burton country. Before coming to Lord Dacre he had been with Lord Southampton. No one could beat him for energy or as a horseman; he would often 'pound' the whole field over an awkward place, notwithstanding his heavy weight. And the condition of his hounds was always first-class. It was often said that Bob Ward hunted the fox and the hounds hunted him, but no one was more patient on a fair scenting day than he was. In the year 1853 these hounds had the longest run ever recorded. The meet was at Broadwater. They soon found, and hunted their fox for four and a half hours, by which time every horse in the field was knocked up and the hounds enjoyed their kill to themselves.

At the end of each hunting season an enjoyable race meeting was held at The Hoo, Lord Dacre's residence, for horses the property of members of the Hunt Club and the farmers of the country. These were flat races, and were continued for many years.

In 1865 Mr. John Gerard Leigh of Luton

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Hoo took the hounds, and built the magnificent kennels and stables on the site of the old ones at Kennesbourne Green. They are said to be 'the best in Europe, bar none.' Mr. Leigh's pack had been for forty years carefully bred. Mr. Delmé Radcliffe only retained fifteen of the fifty couples he took from Mr. Sebright, recruiting them largely from the Fitzhardinge blood, and left a pack of sixty couples as near perfection as was possible. They did not deteriorate under Lord Dacre, who judiciously took for some seasons the Belvoir draft. They were during Mr. Leigh's mastership still what hounds should be, and Ward brought them out in condition, reflecting much credit on his system of hound management.

During Mr. Leigh's too short reign hunting flourished, as the following quotation shows: 'On all sides foxes are well preserved and plentiful—on the south and south-west by Lord Verulam, Mr. Halsey, Mr. Crawley and Mr. Leigh; in the centre, by Mr. Hale of Kingswalden and Lord Dacre; on the east, by Lord Cowper and Mr. Abel Smith; on the north-west, by Lady Cowper at Wrest Park, and by the Duke of Bedford at Woburn, adjoining the grass vale at Todington termed the "Elysian fields." On the extreme north, between Mr. Richard Marsh of Little Offley, Captain Young of Hexton, and Mr. Delmé Radcliffe, whose properties join, the animal is ever in abundance, especially of late years, since they have been joined by Mr. Sowerby, who since his accession to Putteridge Bury has shown foxes together with pheasants in numbers.'¹

On the death of Mr. Gerard Leigh, in 1875, a committee was formed to take over the hounds, consisting of Lord Dacre, Captain Young of Hexton, and Colonel Somerset of Enfield Court. In 1879 Lord Dacre resigned, and his place on the committee was taken by Colonel Blake of Danesbury. Two years later Captain Young resigned; and in 1885 the joint masters and Bob Ward the huntsman resigned, and Captain Peacock became master. Captain Peacock was a very keen sportsman. He lived at the kennels, and hunted the hounds himself with considerable success until 1888, when he was succeeded by Mr. E. R. Sworder, who had been master of the East Kent Hounds. He brought some good hounds with him and improved the pack. At first he hunted one of the packs of hounds himself, and Charles Harris, who had been for many years first whip to old Bob Ward, hunted the other pack until

William Wells came as huntsman in 1893, when, owing to an accident, Mr. Sworder had to give up hunting the hounds himself, but continued the mastership until 1898, in which year Mr. Fenwick Harrison of Kings Walden, Bury, Hitchin, became joint master with Mr. Charles Part of Aldenham, the former looking after the north part of the country and the latter undertaking the southern part. They are the present masters of the Hertfordshire Hounds.

William Wells is still the huntsman, as he has been since 1893. He is a most capable man, both in the kennel and in the field, and the pack has been greatly improved during his time. He has had great experience, first as whip to George Carter with the Milton Hounds, then as first whip to Gillard with the Belvoir Hounds, where he was well known as a good rider, having beautiful hands and seat on a horse. He afterwards became huntsman to the Puckeridge Hounds under Mr. Gosling, and from there he came to the Hertfordshire. He has shown very good sport, and many good runs have been enjoyed under his patient management of the hounds in the field. Joseph Davis is still whip; his knowledge of the country is very great, he having held that position for the long period of twenty-eight years.

Out of many good runs with the Hertfordshire of late years, since Wells has hunted the hounds, one of the best was from Coomb Wood, Shenley, on April 2, 1897, through High Canons and Dyrham, the fox being killed in Totteridge Park—fifty minutes without a check, all over the finest grass country. Another was on January 17, 1900. The fox was found outside The Meg, Hexton, and ran for three hours in two large rings, when he was given up at Higham church, as all the horses were dead beat.

THE PUCKERIDGE HOUNDS

This country was first called by its present name in 1802, when Mr. Sampson Hanbury built kennels at Puckeridge. In the eighteenth century it was called the Hertfordshire or Mr. Calvert's. Its early history is outlined by 'Arundel,' writing in the *Field* of February 2, 1889. 'So long ago as 1725 a few hounds were kept at Cheshunt near Broxbourne, one of the proprietors being Mr. Calvert, an ancestor of Mr. Felix Calvert of Furneaux Pelham, and of Colonel Calvert, late master of the Crawley and Horsham Hounds. These hounds Mr. Calvert subsequently purchased and moved to Albury, where he was

¹ *Baily's Magazine* (1873), p. 262.



ST. ALBANS STEEPLECHASE.—THE START.

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joined by Mr. Panton. Mr. John Calvert succeeded to the hounds, keeping them till about 1794, when they became a subscription pack. Mr. Calvert and his fellow committeemen however appear to have borne most of the expenses themselves, for I find in a newspaper of 1795 that "the subscription list does not fill, as the country does not attract strangers."

This outline is tolerably correct, for we have clear evidence that the pack, which for many years was called the Hertfordshire or Mr. Calvert's Hounds, is one of the oldest in England. Mr. Hanbury had in his possession in 1827 an earth-stopper's card 100 years old; and at that period it was the recognized thing after dinner to propose the toast of 'The Puckeridge Hounds, 100 years old.'

Further details of the early years of this pack are as follows: About 1725 a few gentlemen on the eastern side of the county joined together and formed a pack of foxhounds. It is quite likely they were at first a trencher-fed pack, as the first kennels at Cheshunt are not mentioned until some years later. Mr. John Calvert of Furneaux Pelham was 'put at the head' of the pack. He is described as 'one of the finest sportsmen that ever rode after a pack or ever cast his eye over a country, or ever devoted a mind to the perplexities of scent and the characteristics of hounds.'

A short time after the hounds were kennelled at Cheshunt we hear of hounds being kept at Redbourn, where the Duke of Cumberland, of Cullogen notoriety, had a hunting establishment in 1751. It is probable that hounds were kept at Cheshunt for hunting the eastern side of the country, and at Redbourn for hunting the western side, as it would have been quite impossible for one pack to have hunted all the country from either place. The hounds kept at Redbourn probably hunted the same country which was afterwards hunted by Lady Salisbury who maintained the 'Hatfield Hounds' from about 1793 to 1828.

Mr. Calvert was master for many years, and had Crane as his huntsman. During that time a curious instance of the well known homing instinct of foxhounds occurred. A relation of one of the subscribers was master of the Cumberland Foxhounds, and he sent two dogs and a bitch into Hertfordshire. One day, after a good run, one dog and the bitch disappeared, and shortly afterwards they turned up at their old kennels in Cumberland.

Crane was succeeded by his whip Tom

Hubbard, who remained huntsman for twenty-two years (from 1780 to 1802), and showed excellent sport. During his time the hounds had many good runs, one great one being from Clavering: time, four hours; distance, thirty-five miles.

Tom Hubbard was an excellent huntsman, and does not seem to have lacked a huntsman's characteristics, obstinacy and self-will, for we read of a scene between him and Mr. Panton, at that time (1796) joint master with Mr. Calvert, which might certainly rival, if it is not indeed the origin of, the well known incident in *Jorrocks* that took place between James Pigg and his employer.

It was after a fine run that Mr. Panton observed Tom to be making what seemed to him a wrong cast. He shouted out, 'You fool, Tom, hold the hounds round that headland.' Tom, with the usual and indeed necessary independence of his class, quietly blew his horn and cast his hounds in quite another direction.

'If you don't turn back, I'll discharge you to-morrow.' 'Discharge be blowed!' was the calm rejoinder. 'Before that I'll kill this fox my own way.'

Needless to say the fox was killed, and the huntsman kept his situation.

In 1799 Mr. Sampson Hanbury of Poles became associated in the management of these hounds, and a couple of years later, on becoming sole master, he bought the hounds of Mr. Cox Pigott, who had hunted a portion of the East Essex and Essex Union countries. He had kennels at Standon for a short time, and in 1802 (as stated above) built the new kennels at Puckeridge.

Mr. Hanbury was a popular master and a fine judge of hounds. He hunted the country for more than thirty years, and during his mastership strangers were attracted to the country, and many of the best known sportsmen of the day came from London to hunt with his hounds; Mr. Richard Gurney, one of the best known men of the shires, often said that a fourteen mile run with the Puckeridge was the best run he had ever seen. Mr. Gurney on one occasion refused an offer of £1,000 for one of the horses (by name 'Sober Robin') he rode with these hounds.

Mr. Hanbury was absolutely devoted to fox hunting, and took the greatest possible interest in hound breeding. The story goes that he refused Sir Richard Sutton's offer of 100 guineas for Columbine, one of the Puckeridge hounds. His retirement in 1828 was much regretted, particularly as the last season of his mastership (1827-8) was productive of extraordinarily good sport.

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His successor, Lord Petre, who became master against his inclination, never really took much interest in them, and was unfortunate in having incompetent hunt servants. We read in Mr. Parry's diary of the season of 1831 that 'in consequence of Lord Petre's men being badly mounted and knowing nothing of the country, and none of them anything about hunting except the huntsman, who could not ride at all to his hounds, we lost all our best foxes that would have shown us runs. Never recollect so many foxes in Herts, nor so well found, and with proper management we must have had a capital season.'

Lord Petre was succeeded by Mr. Dalryell, who had been master of the Forfarshire Hounds. He was a good sportsman and hunted his own hounds, but for some reason was not popular in the county, and after three seasons was glad to resign.

In 1838 Mr. John Archer Houlton purchased the Puckeridge Hounds, and became joint master with Mr. J. Calvert of Albury Park and Mr. Nicholas Parry. Mr. Parry subsequently became sole master and owner of the pack, which he retained until the year 1875. He was a most thorough sportsman, and gave up nearly the whole of his time to the management of his hounds in the kennel and in the field.

It was entirely owing to his perseverance that the Puckeridge became at that time a first-rate pack. The drafts from these hounds were keenly competed for by the masters of most of the best packs in England.

Mr. Parry, during his thirty-six years of office as master of hounds, and also previously, kept a regular hunting diary, which occupies seven volumes of commonplace books. He records during the forty-seven years between 1827 and 1874 no less than 4,432 days' hunting, describing the runs and the doings of the hounds and naming the horses he rode each day. A mare named Cinderella was ridden by him forty-seven times during one season.

He appears to have had very good sport considering the country was arable and not good scenting ground. It was no uncommon thing for him to kill on an average more foxes in a season than the number of days he hunted; and this was not done, as sometimes is the case, by mobbing the cubs before the regular season began. In 1860 he found twenty-six litters of cubs. He records that his first four seasons as master cost him on an average £2,069 a season, which appears very moderate for four days a week.

At the end of each season Mr. Parry in

his diary gave a short account of the weather, sport and working of his hounds and horses, from which we find that no matter whether the season had been good or bad for scent the hounds worked capitally. Of course, in so many seasons, a great many good runs are recorded, and it is difficult to single out the best. Long hunting runs of three and sometimes four hours were enough to please the most exacting.

One run from Broadfield Spring on December 1, 1838, was an extraordinary one, for without going through any covert worth mentioning, the fox ran for two hours and five minutes over twenty-three miles of country before he was killed at Langley Warren. Mr. Parry says, 'It was the best run I ever saw in my life with one fox.'

Another good run is recorded on February 25, 1842, with a fox which was found at Gilston, and ran through Eastwick, Shirley Green, across the water at Blakes Ware, on to Nimley Bourn, through Camelhall Springs, Thorley and Tednambury, crossed the Stort to Hyde Hall, on to Hallingbury, and was killed in Hatfield Place after a run of two hours and fifty minutes, nearly the whole way at a severe pace.

But probably the best run ever recorded was on March 5, 1846. Meet at Throcking. 'Found at Friars, went to Broadfield to drain at Throcking, from which he was bolted, ran for Hyde Hall and made a ring to Friars, leaving it on the right and back very fast to Broadfield, skirting Horney in a line for St. John's to Tannis and Barton Green and on to Great Munden church, through Hamels to Membly and Puckeridge to Old Hall, to Adam's covert, Blackney Mead Springs, and was killed within one field of Bartram's Wood. Distance about 28 miles.'

Shortly before Mr. Parry gave up the hounds he had a bad fall, from the effects of which he never recovered. He lay for a long time unconscious, and his first words on coming to himself were, 'Did they kill him?'

In 1875 Mr. Parry sold his pack to Mr. Robert Gosling of Hassobury, who hunted the whole country until 1885. Mr. Gosling took as much interest in hound breeding as Mr. Parry had done, and bred on much the same lines, chiefly from Belvoir sires. Mr. Gosling, who hunted the country practically at his own expense, mounted his men well and kept up the reputation of the pack. He was fortunate in obtaining the services of William Wells as huntsman, who had been tutored by George Carter, and had been first



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whip to Gillard with the Belvoir. William Wells is now huntsman to the Hertfordshire Hounds. In the last year of Mr. Gosling's mastership of the entire county there were three remarkable runs across the Essex country from Chickney Springs near Elsenham.

In 1885 an unfortunate dispute arose, and the country was divided, Mr. Swindell taking a portion of it and hunting it from new kennels at Hay Street near Braughing, whilst the eastern side was hunted by a committee under the name of the 'Herts and Essex.'

In 1894 the country was happily reunited (in every sense of the word) under the mastership of the Hon. L. J. Bathurst, who carried the horn himself and showed good sport.

On Mr. Bathurst's resignation in 1896, Mr. Edward Barclay, long known as a successful master of harriers, was elected master of the Puckeridge. Mr. Barclay resides on his own property at Brent Pelham, in the centre of the country, where he has built kennels. Mr. Barclay hunts the dog-pack himself two days a week, whilst James Cockayne carries the horn with 'the ladies.'

THE OLD BERKELEY HOUNDS

The origin of the Old Berkeley Hounds is somewhat obscure. The country extended originally for about 120 miles, from Cranford in Middlesex to Berkeley Castle in Gloucestershire—'from Kensington Gardens on the east to the suburbs of Bristol on the west.'

This country was hunted by successive earls of Berkeley until 1800, the kennels being at Cranford in Middlesex, Gerrard's Cross in Bucks, Nettlebed in Oxfordshire, and at Berkeley Castle. Mr. Grantly Berkeley, in his *Reminiscences*, published in 1854, says: 'Smith, in his MS. history of our family, speaks of a Lord Berkeley who used to keep his hounds at the village of Charing, with thirty huntsmen in tawny coats to attend upon them. My father maintained the orange or yellow or tawny plush for his Hunt. Mr. Combe (about 1820), in remembrance of the name, called his hounds the Old Berkeley, and retained our livery . . . to show the increase of packs of hounds in the last 80 or 100 years, my father (the fifth Earl of Berkeley) used to hunt all the country from Kensington Gardens to Berkeley Castle and Bristol.¹ Scratch Wood (near Elstree, now a joint covert of the Hertfordshire and the Old Berkeley) was the nearest covert to London ;

¹ This country is now hunted by the Old Berkeley (East and West), the Berkshire, the Oxfordshire, and the Berkeley packs.

but I have heard old Tom Oldaker say that while with my father he found a fox in Scratch Wood, and lost him in rough ground in Kensington Gardens. There was a kennel at Cranford, I believe, a kennel at Gerrard's Cross, and I know there was one at Nettlebed (in Oxfordshire) in my father's time. Where else the hounds used to be put up in that wide stretch of country I know not, but I suppose occasionally at inns.'

It was apparently found convenient to hunt one part of the country for about three weeks or a month at a time, and then to remove the hounds to other kennels and to hunt another part of the country for about the same period, for we read in the *Sporting Magazine* that 'On Saturday, November 11, 1797, the Old Berkeley Hounds removed from Marlow, after hunting in Berkshire, to their kennels at Gerrard's Cross, from which they alternately hunt their Herts and Bucks districts till some time after Christmas, when they return to Berkshire.'

A good run is recorded in the *Sporting Magazine* of 1796. The fox was found in Newlands Wood, ran to ground in Moor Park, Rickmansworth, then the residence of Mr. Rous, was bolted by terriers, and ran to ground again in Batch Wood near St. Albans.

In 1801 the Old Berkeley pack became a subscription pack managed by Lord Berkeley, Mr. Williams and Mr. Dupré. The hounds were, in 1810, taken by the Hon. and Rev. W. W. Capel, with Tom Oldaker as his huntsman, and were kept at Gerrard's Cross. These kennels were afterwards turned into a public house, and on the wall of the adjoining cottage a stone still bears the inscription, 'Huntsman's Hall, 1796.'

They had three famous runs in Mr. Capel's time from Oxhey, one to ground where Willesden station now stands ; another round Harrow Hill, and killed at Rickmansworth ; and a third run with a kill in Hatfield Park, a fifteen-mile point. In 1816 they had a great run from Bury Bushes, three hours ten minutes, and out of a field of 300 only fifteen were at the finish. Tom Oldaker was huntsman for thirty-two years. His picture was twice painted by Marshall ; once on his celebrated horse Brush, which he rode for seventeen seasons. Grantly Berkeley says of him that when there was little or no scent to serve him he could 'guess a fox to death.' He died at the age of eighty, in the year 1831.

The tawny yellow plush coat was only the hunt livery, the members of the hunt wearing scarlet with yellow collars.

During the mastership of Mr. Capel a cele-

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brated action was brought against him by his brother, the Earl of Essex, for trespass. The Old Berkeley Hunt had been warned off Lord Essex's land, and yet Mr. Capel, hounds and huntsmen rode through Cassiobury Park one day in pursuit of a fox. Lord Ellenborough decided that as the trespass was committed for the purpose of diversion and amusement, and not as the only means of destroying a noxious animal, the verdict must be in favour of the plaintiff, the Earl of Essex.

Many curious stories are told of Mr. Capel, who was quite a character in the neighbourhood of Watford. On a Sunday, after performing the morning service, he constantly was obliged to take the coach at Watford so as to be at some distant meet of his hounds on the Monday. One Sunday he requested the Aldenham parson to come over and take his duty, but this gentleman declined to do so as he was busy clipping his horse, in those days a laborious occupation.

Nearly all the Capel family were keen sportsmen. Mr. Harvey Combe, in recommending one of the Hon. William's sons to 'Nimrod,' says: 'He is well bred for a sportsman. I remember one day with the Old Berkeley Hounds there were out (all mounted) his grandfather, his grandmother, his father, his mother, two of his sisters and two of his brothers.' When Mr. Capel resigned, Mr. Harvey Combe took the hounds about the year 1820, and with Tom Oldaker as huntsman hunted the Berkshire and south Oxfordshire countries, in addition to the present Old Berkeley country, from the Gerrard's Cross kennel.

In 1826, though he gave up the Berkshire country, he still hunted the south Oxfordshire. And the Old Berkeley Hunt country then extended from Scratch Wood (seven miles from London) to Cirencester in Gloucestershire, or, as it was said, 'from Barnet to Bath, with leave to draw the Zoological Gardens.'

Mr. Harvey Combe was a real good sportsman of the old school, and travelled immense distances to be with his hounds, his home being in Surrey. No one could have been more zealous, and he spared neither trouble nor expense to show good sport. In 1833 Captain Freeman was master for one season, with Baily as his huntsman. In 1834 Mr. Harvey Combe became master a second time. He bought Mr. Osbaldeston's celebrated pack of hounds that had been previously bought in at Tattersall's for £4,600, and the kennel was at Parsonage Farm, Rickmansworth. Richard Hills was huntsman, succeeded by Will Todd. A great run at this time was from Denham

Marsh through Ruislip, with a kill at Hendon—seventeen miles, the last twelve being all over grass.

In 1840 Mr. Thomas Allen of The Vache took the mastership for a short period. After his retirement, Lord Lonsdale hunted the Old Berkeley country round Tring and Chesham from 1842 to 1862. In his later years he used to bring down foxes with him from London, which practice was celebrated in verse. The first lines run as follows—

There is an earl of ancient name
Who hunts the fox, but prefers him tame.
His father had mounted his thoroughbred horse,
And viewed the wild fox from his native gorse.
His son has come down by a second-class train
Worried the bagman, and home again.

These bagmen were occasionally captured alive and turned out again another day.

Jem Morgan, his huntsman, was killed by a fall, and was succeeded by Godard Morgan, a fine horseman with a reputation for gate jumping.

Lord Lonsdale gave up the Old Berkeley Hounds to Lord Malden in 1862, who kept them on Chorley Wood Common, where they still are. In 1867 Mr. C. A. Barnes, who had before kept harriers, became master for two years, being succeeded by Mr. Leicester Hibbert of Chalfont and Mr. Blount as joint masters. These gentlemen kept the hounds until 1875, when they were succeeded by Mr. A. Longman as master, who built kennels at his place at Shendish, near Kings Langley, and moved the hounds there from Chorley Wood. In 1881 the country was divided, Mr. Longman taking all the country in Hertfordshire under the name Old Berkeley East, and Mr. Austin McKenzie taking all the Buckinghamshire part of the country under the name Old Berkeley West.

This arrangement lasted until 1885, when the country was united again and hunted by Mr. Harding Cox. He took great interest in the hounds, and had a very good pack, owing largely to the purchase of the Blankney pack; but in 1888 the country was again divided into the same divisions as before, both divisions being managed by committees. The committee of the Old Berkeley East which hunted the Hertfordshire side of the country consisted of the Earl of Clarendon, who acted as field master, with the Hon. A. Holland Hibbert as hon. secretary.

In 1891 Mr. R. B. Webber (whose father had kept a pack of harriers at Aldenham) succeeded the committee, and remains still the master of the Old Berkeley East. For

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some years Mr. Webber successfully hunted the hounds himself, and showed very good sport, especially in his grass country. The hounds are now hunted by a professional huntsman; George Sheppard, from the Hertfordshire, being the huntsman in 1900.

The Hertfordshire part of the Old Berkeley country is mostly arable, and the coverts are very large. Shooting goes on extensively, and there is much pheasant preserving and breeding, but foxes are probably just as plentiful now as they ever were, for we find many references to their scarcity in the old magazines; coverts in the Old Berkeley country being often drawn blank. Bricket Wood is several times named in these old magazines as being one of the best meets, probably on account of its being a sure find—'When there are no foxes in Bricket, there are no devils in hell.' This big wood extends to 800 acres, and has been carefully looked after by its present owner, the Hon. A. Holland Hibbert, a good all-round sportsman, who was for several years the energetic secretary of the hunt, succeeding Mr.

Harvey Fellows, who held the office for twenty-one years. On one side of Bricket Wood, and all round Stanmore, Newberries and Scratch Wood (all joint coverts with the Hertfordshire), the country is good scenting grass, and many are the gallops which have been enjoyed in this part of the country. We read of a run from Newberries in 1873, thirty-five minutes 'all over grass'; and there was a great run there from Newberries to Northaw in 1898, during Mr. Webber's mastership.

The briars in Newberries were so thick in the old days that Boxall the huntsman used to resort to the expedient of taking a terrier into the thickest part of the covert, and pinching his ear to make him squeak, that being the only way to induce the hounds to face the briars.

Amongst other old landmarks in this country indicative of the 'sport of kings' is Gott's Monument, a tall stone obelisk near Chalfont, which was erected by George III. solely as a hunting landmark to enable him to know where he was.

HARRIERS

Previous to the time when regular packs of foxhounds were kept many landowners had a few hounds, with which they hunted deer, fox or hare, whichever they happened to find. After the establishment of foxhound packs, many of these private packs were still kept up, but were devoted to hunting the hare, or on rare occasions a turned out deer. Some of the Hertfordshire packs of harriers were very carefully bred, many of them from the old southern hound, and for some time were a distinct breed from the foxhound. Most of the packs of harriers in Hertfordshire were only kept for short periods during the pleasure of the particular master, who generally hunted over his own and his neighbours' land. He kept the hounds at his own expense, and took them out when he felt so inclined, the pack being in no sense a public one.

Almost the oldest private pack in Hertfordshire was that kept by successive Marquises of Salisbury at Hatfield, with which the country in the Hatfield neighbourhood was hunted until 1793, when Lady Salisbury became mistress of the Hatfield Foxhounds.

Squire Wortham's Harriers are famous in history. They hunted in the Royston district, and were in their day a most justly popular pack. One famous meet took place every year on 'Little Fair Day,' at the top of 'One Hill,' an eminence on Royston

Heath. Hither flocked all the followers of the hunt, regular and irregular, and they were seldom disappointed in their sport. 'Old Matt,' the huntsman, and Sir Peter Soame of Heydon, the baronet, were notable figures in this hunt; the former renowned for his stentorian voice and holloa, which could be heard, it is said, from Therfield to Royston, and the latter remarkable, and probably uncomfortable, in his skin-tight breeches, which he only managed to get into at all by keeping them damp over night, and even then he could not always manage it in the morning without resorting to the expedient of sliding down the balusters.

On the borders of Hertfordshire and Bedfordshire, in the district round Biggleswade, Mr. Race's Harriers have for the last 100 years enjoyed a high reputation. That fine old sportsman, Mr. George Race of Biggleswade, a good judge of hounds, is still alive, and still enjoys a day's hunting in his pony carriage. He is now over eighty-two years of age, and for the last sixty years has been master of these harriers. His father kept them for forty years before him. It is surely unprecedented to find a country hunted regularly for 100 years by father and son.

Mr. Delmé kept staghounds and harriers at the Priory, Hitchin, on a scale of great magnificence. He was considered the best

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gentleman coachman of his day, and his three teams of grey, black and cream were admitted to be unsurpassed by any in England; he it was who taught George IV. to handle the ribbons. Some idea of his expenditure on his stables may be gathered from the fact that after his death ninety-five of his horses and ponies were sold at Tattersall's.

Mr. Delmé married a daughter of Mr. Radcliffe of Hitchin Priory, and his son, who took the name of Radcliffe, was the author of *Noble Science*. Mr. Delmé Radcliffe's first venture as a master of hounds was with a pack of harriers on his large estates at Hitchin Priory, which had been granted to his ancestor by Henry VIII. after the suppression of the priory. Mr. Delmé Radcliffe subsequently sold this pack of harriers to Sir James Flower, and himself became master of the Hertfordshire foxhounds in succession to Mr. Thomas Sebright.

Sir John Sebright, father of Mr. Thomas Sebright, had also a celebrated pack of harriers with which he hunted the country round Beechwood prior to his son taking the mastership of the foxhounds; these harriers were all well marked black and tan, and were sold for a high price to the duke of Brunswick.

In 1852 the late lord Brownlow established a small pack of six couples of beagles at Ashridge to hunt in the park and home farms; and in 1854 Mr. Fernie, who was the field master, bought a pack of harriers from Parson Jack Russell. And with this pack came Richard Rawle as huntsman, he having whipped in with his father to the famous parson who hunted his own hounds in Devonshire. Lord Brownlow kept this pack at Ashridge until ill health compelled him to give up hunting, and the hounds were removed to the kennels on Berkhamstead

Common. The grand sport that they showed for several years was enjoyed not only by visitors at Ashridge but by the farmers and hard-riding sportsmen in the Vale of Aylesbury, some of whom still remember it with pleasure. These harriers were hunted by Rawle up to the year 1867, when they were sold, and Rawle purchased Sir Clifford Constable's Staghounds.

Many other packs of harriers have been kept in Hertfordshire, as for instance Mr. Cheshyre's pack, which was hunted by him for a great number of years in the neighbourhood of Hertford until 1888, when Mr. Abel H. Smith of Woodhall became master. This country has not been hunted by harriers since he retired, after many successful seasons.

The Aldenham Harriers, which still exist and hunt the district round St. Albans and Aldenham, were established by Mr. George Gibbs. He was fortunate enough to get on well with the farmers in the Elstree neighbourhood, where the best of his country lay. He was succeeded in the mastership by his cousin, Mr. Herbert Gibbs. In 1885 Mr. Herbert Gibbs resigned and presented the hounds to the country. They have since been called the Aldenham Harriers. Mr. Lionel Rickards, one of the editors of the *Harrier Stud Book*, succeeded as master, and he and his successor, the Hon. C. Bampfylde, brought the pack to such perfection that the champion prize has several times been won at the Peterborough Show with hounds from the Aldenham kennel. The hounds are now hunted by Mr. H. Bailey of Cuckmans, who is very popular with the farmers. Harriers have also been hunted by Mr. Barnes at Rickmansworth, Mr. Heysham at Staganhoe, Mr. Alfred Taylor at Hochrill, Captain Fairman at Bishop Stortford, Mr. Cox, West Mill, and Mr. Archer at Bendish.

STAG HUNTING

There are two packs of staghounds that hunt in Hertfordshire—the Berkhamstead Buckhounds and the Enfield Chase.

The Berkhamstead Buckhounds were established in 1870, and were the successors of a well known pack of harriers kept for about twenty years by the late Lord Brownlow at Ashridge, which were much appreciated by the hard riding farmers in the vale of Aylesbury. Mr. Richard Rawle became huntsman to the Ashridge Harriers, but these hounds were sold in 1867 and were replaced by a pack of staghounds. The staghounds and the

deer were bought from Sir Clifford Constable, and were established at the kennels on Berkhamstead Common. At first these hounds hunted buck, which were taken to the meet in a crate on a van. The sport became popular in the neighbourhood, and very soon red deer were used for hunting instead of bucks and many very good runs were enjoyed.

Mr. Richard Rawle, whose quaint figure was well known to all visitors at 'Tattersall's,' became master and hunted the hounds for many years. He still occupies the post of



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master, although unable now to follow his pack.

The equally well known Charles Miles, who under the nom-de-plume of 'Dragon' has for many years recorded the annals of hunting in Hertfordshire, has also been treasurer and a regular supporter of the hounds since the year 1876. It is due to the efforts of keen sportsmen such as these and to the energy of several others in the neighbourhood that the Berkhamstead Buckhounds have had so many wonderful runs, and have at the same time been kept up more or less as a private pack, principally to provide sport for the farmers and gentlemen of Herts, and the fields have not been allowed to become overrun by a crowd of uninvited non-subscribers.

Some of the great runs with these hounds were as follows: one from Flamstead to Missenden in Bucks, one from Flamstead to Hitchin and back to Luton in Beds, and another from the same place to Kenton near Harrow in Middlesex. In 1880 they ran from Harpenden to Puckeridge, where they had to stop the night. From 1880 to 1890 one famous stag gave them many great runs, notably one from Berkhamstead to Totteridge, and from Sandridge to Barnet Gate, then on to Cannons Park, Edgware, where very few saw the stag taken.

Jack Rawle has of late years taken his father's place as huntsman and still occupies

that position, and continues to show good sport to a typical Hertfordshire field.

ENFIELD CHASE STAGHOUNDS

In 1885, when Colonel Somerset retired from the mastership of the Hertfordshire Foxhounds, he took over the pack of staghounds that had hunted the eastern portion of the county, and had his kennels close to his residence at Enfield Court, and called his pack the Enfield Chase Staghounds. He hunted the country that was so much patronized by Queen Elizabeth when she resided at Hatfield House. No staghounds had hunted it since the days of Queen Elizabeth until Colonel Somerset's time. He adopted the uniform of Queen Elizabeth's Hunt servants, scarlet coat and orange cap.

The country hunted by these hounds is mostly in Hertfordshire, and there is a considerable proportion of grass which when not too wet is a fine country to ride over. When the country is very wet the deep going often drives the deer on to the roads. In 1899 Colonel Somerset, much to the regret of all the followers of the hounds, resigned the mastership, and was succeeded by Mr. Hills Hartridge, who has built new kennels near Potters Bar, and has shown good sport. Owing to most of the meets being within easy reach of London many of the followers hail from the metropolis.

SHOOTING

There are few counties in England where game is more strictly preserved for shooting than Hertfordshire. This county, though adjacent to the metropolis, has yet retained to a great extent its rural character; it is therefore, almost as a matter of course, looked upon as the natural sporting ground of those who are obliged to make London their home.

There is consequently a great demand for shooting all over the county, and at the present time it would be difficult to find a farm or a covert that is not preserved.

Pheasants are reared extensively for shooting all over the county, and in some parts, notably the Hemel Hempstead neighbourhood, they are kept in pens solely for the profits that can be made through the sale of their eggs.

In looking back to the early history of this sport one finds that shooting with bows and arrows was apparently brought to great perfection by the ancients. The crossbow dates from the eleventh century, and continued to be used for sporting purposes until

the sixteenth century. In King James I.'s time it is recorded that the king, when stay-at Theobalds in Hertfordshire, shot deer with the bow, the deer having been previously hunted with hounds from the thick recesses of the woods into the open.

An interesting bill for dainties appears amongst the expenses of Queen Elizabeth's visit to Sir Nicholas Bacon at Gorhambury from Saturday, May 18, 1577, until the following Wednesday, showing the variety of game obtainable at that time. How the birds indigenous to the county were killed is a matter of conjecture, but presumably by fowling or netting and hawking.

Hérons, 12 doz. and 8 (£26 13s. 4d.); bitterns, 8 doz. and 10 (18s. 7d.); shovelers, 13 (£2 3s. 4d.); pheasants, 2 doz. and 5 (£3 12s. 6d.); partridges, 14 (11s. 8d.); quails, 16 doz. and 9 (£8 7s. 6d.); May chickens, 17 doz. (£3 8s.); mallards, 23 (15s. 4d.); teals, 12 (4s.); larks, 3 doz. and 9 (2s. 6d.); curlews, 3 (4s.), etc.

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It is curious to find amongst the Hatfield bills, so long ago as 1629, one 'for hens to sit on pheasants' eggs,' which cost 1s. each, and another for a hen that brought up some partridges. By other bills it appears that a yard was established at Hatfield for breeding partridges and pheasants; that a dove house existed; and that tame cormorants were kept for fishing, probably in the Lea.

When the Salisbury family went to reside at Quickwood near Baldock, it was from their Hatfield home that they stocked the country round Baldock with partridges.

A Captain Philips, writing to Cecil in 1609, offers to send him any number of wild boars to stock Hatfield Park, but this offer does not appear to have been accepted.

The livery for the Hatfield gamekeepers in 1629 was green Padua serge laced with silk.

Poachers appear to have been severely dealt with in this county down to 1796, for we read in that year of two men being convicted of taking a brace of hares at night, on Mr. Osgood Hanbury's estate at Coggeshall, the penalties on each of these 'villains' for the above offence were as follows: £5 for no license; £5 for being unqualified; £5 for killing at night; £5 for keeping dogs and engines; and transportation for seven years for beating the gamekeeper. 'In this instance, however, the whole penalty was generously, perhaps too generously for the sake of general society, mitigated to a fine of £15.' If the full penalty had been inflicted on these men, they could have been fined £100 each.

The county records, recently collected and bound by the County Council, contain the depositions of one Joseph Ansell, a gardener, which, if true, does not say much for 'justices' justice' a hundred years ago in the county. He stated that he was walking along a footpath through a wood at Kings Walden with a little terrier dog at his heels, when he was suddenly arrested by Joseph Dynes, keeper to Mr. Hale, who, with the assistance of an underkeeper named Cotton, searched him, Cotton holding a sword with its edge close to Ansell's face. After trying unsuccessfully to extract a confession of poaching, the keepers took Ansell before Mr. Brand of Kimpton Hoo, a magistrate for the county. Here he was detained until eleven o'clock at night, as Mr. Brand was playing cards and could not be interrupted. There was no evidence produced against Ansell, except that the keeper said he heard him say 'Chew' to his dog, but the dog did not leave the footpath. He was nevertheless convicted and fined £10.

Shooting at flying game is a comparatively modern sport, not having been practised until

the end of the eighteenth century. But at the beginning of last century guns of a primitive nature came into general use for sporting purposes and the sport became more common.

In January, 1822, what was thought at that time to be a record bag was made at Ashridge Park. The Earl of Bridgewater having a royal shooting party, shot for three days and bagged 1,200 head. The guns included H.R.H. the Duke of York, the Duke of Wellington, the Marquis of Londonderry and Lord Verulam. Considering the comparatively short time that guns of precision had been in use, the shooting appears to have been extremely accurate.

First day seven guns had 627 shots and killed 326 head of game. Second day nine guns had 956 shots and killed 511 head of game. Third day eight guns had 388 shots and killed 261 head of game.

Double-barrelled guns had just come into use, and it is reported that on this occasion 'The Duke of Wellington's double barrelled gun brought down everything before it.'

In 1825 a bet was made by the Marquis of Salisbury with Sir John Sebright, that he would find four gentlemen who would kill 100 brace of wild partridges in one day, only one gun to be used. The match came off on September 1, at Hatfield. The four gentlemen chosen were Sir C. Cuyler, who took the gun first. He shot 24 brace in 1½ hours on the marquis's farm. Mr. Samuel Whithead then took the gun and shot 11½ brace in 1½ hours on the home farm and 14 brace on Pope's manor. Sir C. Cuyler again took the gun and shot 27 brace on the home farm. The remainder of the required 100 were easily shot by the Hon. M. de Ros and Mr. Delmé Radcliffe—the latter, who was one of the best shots in England, killing 18 brace in forty-five minutes. Sir John Sebright 'with great promptitude and good humour' discharged the debt.

On the occasion of her late Majesty's visit to Hatfield House in October, 1846, accompanied by the Prince Consort, the Marquis of Salisbury arranged a shooting party for the prince. At half-past ten on October 23, the prince, with the Duke of Wellington, Lord Exeter and Lord Spencer, started with one party. Present, but without guns, were Lord Salisbury, Lord Marcus Hill and others. They had excellent sport, and the prince proved to be quite a first-class shot; he on that occasion shot more game than he had ever done before in the same time. The prince, who shot with four guns, killed 150 head of game, which was at the rate of one head of game per minute for the whole time



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he was out. Lord Spencer shot 80 head; Lord Exeter 50; Lord John Russell, who arrived late, 30; and the Duke of Wellington 16. The prince shot again the next day and killed 112 head of game.

In a county like Hertfordshire, where such a large number of pheasants are reared, it is not surprising that many large bags have been made in recent years.

As a sport pheasant shooting is the most artificial of all shooting, generally speaking most of the birds shot are hand reared, and the number shot depends upon the number so reared.

There are however in this county many manors on which pheasant shooting is seen at its best, where birds fly high over the shooters and trouble is taken to prevent birds being driven over the guns like barn-door fowls, which has given rise to an unreasonable outcry against what some are pleased to call the 'modern battue.'

Notably amongst the manors where good pheasant shooting is enjoyed are Panshanger,¹ Brocket, Ashridge, Hatfield Park and Gorbamby.

Partridge shooting, on the other hand, is a real sport in Hertfordshire, although there may be different opinions as to whether driving partridges or walking them up is the most sportsmanlike. There can be no doubt however that larger bags have been obtained since driving became the fashion. One of

the best, if not the best, bags of driven partridges was obtained on the Chrishall Grange farms near Royston, belonging to Lord Hampden. The shooting was rented by the Messrs. Blyth, and they on one day with nine guns in October, 1899, shot no less than 505 brace of partridges. Almost as good bags were obtained at Putteridge Park, when the three brothers Sowerby—probably the three best shots in England for three brothers—with three other guns killed 335 brace in 1896 in one day, and 360 brace in one day in 1897.

Some extraordinary wood pigeon shooting was enjoyed by the brothers Sowerby in January, 1899. One windy morning they and one keeper posted themselves after putting out the decoys, and shot by noon 500 wood pigeons picked up. Mr. Thomas Sowerby killed 287 to his own gun without killing more than one to one shot. The next day they killed 400, and during the month of January they shot no less than 3,500.

In some places in the county a considerable number of wild ducks are reared and preserved. At Tring Park on October 25, 1897, when King Edward VII. was the guest of Lord Rothschild, the bag was 505 wild ducks, 226 coot, and a few extras. These were all shot on the Marsworth and Wilstone reservoirs on the Tring estate. On one occasion in 1899 the Duke of Cornwall and York shot over 100 wild ducks at one stand on the bridge near Brocket Hall.

FISHING

The 'gentle craft' of fishing has always been popular in England, and many are the books that have been written on the subject. Some of the oldest treatises dwelt chiefly on the art of making fishponds, which were from the times of Julius Cæsar important adjuncts to country houses, and almost a necessity to religious establishments.

Fishing as a sport was practised from very early days, as we know from the following story. Plutarch relates how Antony and Cleopatra went out fishing together, and as Antony could not catch any fish he bribed divers to fasten some on to his hook. Cleopatra feigned pleasure and pretended not to see the ruse, and next day summoned her friends to see Antony fishing, having previously instructed the divers to fasten a *salt* fish on to Antony's hook. This was done, much to

his confusion, in the presence of Cleopatra and her friends.

Chauncy in his history of Hertfordshire says: 'This county is pleasantly watered with many small brooks and rivers which do greatly accommodate the houses of the nobility and gentry, increase the grass in the meadows, advance the trade of the inhabitants by navigation, and produce variety of fish as eels, miller's thumbs, cray-fish, trouts, gudgeons, bream, carps, tench, perch, roach; and the river Lea salmons, and if these fish had free passage by the mills where they might spawn in fresh water and were carefully preserved from poachers, they would greatly increase in that river.'

The chief rivers in the county are the Lea, the Colne, the Ver, the Gade, the Bulbourne, the Mimram, the Rime, the Beam, the Rib and the Stort.

There is one fish at least which inhabits all these rivers and which no one wishes to preserve. That is the pike; but for its

¹ Lord Cowper has in his possession a game book which was kept by the Prime Minister, Lord Melbourne, of the game shot at Panshanger.

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presence there would be a far greater number of trout in the rivers, and where care is taken to kill as many pike as possible, the trout have greatly increased in numbers.

In ancient times, before there were facilities for obtaining sea water fish, what are now called 'coarse' fish were highly prized and fed in ponds and rivers; more especially in the ponds and rivers owned by the monks and abbots of St. Albans, Westminster and Ely. Sir Francis Bacon constructed the considerable series of ponds which are still called the pond-yards at Gorhambury, close to the Redbourn road. Here he bred and fed and caught carp and other coarse fish which were at that time looked upon as excellent eating. Cardinal Wolsey, whose country residence was Moor Park, Rickmansworth, also often occupied his leisure hours in fishing in the river Gade.

An interesting case was tried in James II.'s reign as to whether the right of fishing in the river, which was at that time called the Quick but is now known as the Colne, belonged to the lord of the manor. In the year 1688 Algernon Earl of Essex sent five farmers 'armed' to fish and carry away fish from the Quick river. Thomas Kilby brought an action against them that on the first day of September, 1688, they broke the close called Ware eight, the close called Seize eight, also Long eight and Lagershott eight in the parishes of Watford and St. Stephens and did fish and carry away 1,000 pickerells, 1,000 tenches, 1,000 carpes, 1,000 roaches, 200 pykes, 200 perch and 200 trouts, and trod down the grass to the great damage, etc. The five farmers set up a plea that the Earl of Essex was seized of the manor of Meredin or Morndon in his demesne as of fee and that the Earl of Essex from time *immemorial* had the sole right of fishing in the Quick river, and that the damage to the grass was unavoidable in fishing the river. Thomas Kilby denied the Earl of Essex's claim and himself claimed the exclusive right of fishing there. Tried at Hertfordshire assizes before two judges and a jury, a verdict was given for Thomas Kilby, the jury having found that the Earl of Essex had not as lord of the manor the right of fishing in all the river Quick.

Several of the rivers in the county were preserved for the kings of England, and sometimes only the trout were reserved for the king—notably at Kings Langley and Bushey.

Cormorants were kept at Theobalds by King James I. for catching fish, and also by successive Lords Salisbury at Hatfield.

A large pike was caught at Totteridge in

1797 which weighed 40 lb. and measured $3\frac{1}{2}$ feet long and 2 feet in circumference. Inside this pike was found a tench weighing 4 lb. In 1839 Wants Inn, Broxbourne, was well known as the principal fishing station with the largest subscription club near the metropolis.

At the present time the only fish in the Hertfordshire rivers that is really prized is the trout, and to a less extent the grayling. The beautiful and highly scientific branch of fishing for trout which is yearly coming more into favour is the fishing with the dry fly, that is, watching for a rising fish and then casting a dry fly above the fish and letting the fly float down over the fish, instead of the old method of submerging the fly and guiding it across the current, as is usually done in the more rapid rivers.

The streams of this county are wonderfully prolific in insect life, and besides the numberless flies which breed in our rivers, there are large numbers of larvæ, shrimps and water snails. With so large a choice of food our river trout are much more dainty feeders than the trout that inhabit the mountain rivers, and are therefore much more difficult to tempt with the artificial fly, and it is only when the trout are rising freely at the natural fly that the dry fly fisherman can hope to make a good basket in the Hertfordshire rivers. Mr. Halford, who is the greatest living authority on dry fly fishing, and who has often fished the principal Hertfordshire streams, thus describes the *modus operandi*. 'The angler selects his fish, gets behind him (that is below him), and prepares for a cast up stream. Then taking two or three false casts in the air to judge the distance the fly is thrown with the intention of making it fall gently a foot or two above the rising fish and exactly in his line. The slightest clumsiness on the part of the angler is fatal and puts the fish down for the next half hour.' Thus not only is great skill required in casting, but great knowledge of entomology is also required, which the fisherman can only acquire by his own habits of observation.

In most of the chalk streams in Hertfordshire the mayfly, which belongs to the family *Ephemeridæ*, is present, and where there are large numbers of these insects the best sport is always to be had. The trout during the ten days or fortnight that this fly is on the water eat them with great avidity, and also freely take the artificial fly when skilfully cast.

So greedy are the fish when the fly is numerous, that they are apparently unable to distinguish colour. Sir Herbert Maxwell, when fishing in the Gade at Cassiobury in

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1899, put on a red fly of the same shape as a mayfly and was as successful with it as he had previously been with the ordinary mayfly.

The river Gade is probably the best trout-fishing river in the county owing to its gravelly bed, which makes excellent ground for spawning. On June 1, 1897, the Hon. A. Holland Hibbert of Munden, fishing on the Gade, caught between the hours of 9 a.m. and 9 p.m. no fewer than eighty-five trout, weighing 120 lb., the flies he used being the mayfly, the alder and the sedge.

Many improvements can be made in our rivers by good management; this is probably nowhere more apparent than in the portion of the river Colne that passes through Munden. The river was first dragged with the net in 1872 and only one trout was caught and a large number of pike and coarse fish were taken out. Between the years 1872 and

1899 no less than 1,151 pike and 7,700 coarse fish have been taken out of this portion of the river, and for some years either 1,000 yearling trout or 250 two year olds have been turned into it. The result has been that in late years the ordinary catch of trout has been from 250 to 330 per annum, averaging over 1 lb. in weight, and the largest fish weighed 6 lb. 6 oz., caught in 1896, while several others of 5 lb. and 4 lb. have also been caught.

This improvement has taken place with but little assistance from the proprietors of the river either above or below the Munden water, which is about three miles in length. There are many other owners of water in Hertfordshire who have improved the fishing in their rivers, especially in the Club water on the river Lea near Hatfield and in the Mimram at Marden.

HAWKING

The art of hawking was practised throughout Hertfordshire at an early date, the right of hawking being claimed by most of the great lords in the county in the reign of Edward I. It was a sport much indulged in by ecclesiastics over the numerous manors in Hertfordshire owned by them and where they exercised their sporting rights. We have evidence of preserves for partridges and other birds by the abbot of St. Albans at various places, by the abbot of Westminster at Wheathampstead, by the king at Kings Langley, and by many others of less degree at other places. The wooded condition of the county however, particularly on its western side, probably interfered with the sport and caused the loss of many a hawk. Before the introduction of the musket hawking was a necessary means of obtaining flying game, although it was essentially an aristocratic sport on account of the expense entailed in the purchase, training and maintenance of the birds.

It was, as is well known, a favourite diversion with ladies, and Hertfordshire can boast of having produced the earliest English treatise on the subject, and that by one of the gentler sex, Dame Juliana Berners, who in her *Boke of St. Albans*, enters minutely into the subject and instructs us in 'the manner to speak of Hawks from the egg.' We must not say young hawks are hatched, but 'disclosed'; they do not breed but 'eyer'; they 'timber' their nests, not build them; when they first leave the nest they are 'bowesses,' and when they can fly they

are dubbed 'branches.' She mentions that hawks are liable to a variety of diseases, of which gout was by no means an uncommon one. Dame Juliana ends her list of hawks with a characteristic qualification—

An Eagle for an Emperor.
A Gersfalcon for a King.
A Peregrine for an Earl.
A Merlyon for a Lady.
A Goshawk for a yeoman.
A Sparrow hawk for a priest.
A Muskyte for 'an holiwater clerke.'

In Queen Elizabeth's time hawking was very fashionable in Hertfordshire. The queen herself indulged in the sport during her numerous visits to Sir Robert Cecil at Theobalds, and on September 16, 1595, Lady Wolley writes to Sir W. More: 'Yesterday evening Her Majesty went abroad hawkyng. Sir R. Cecil's hawke killed three partridges which he presented the Queen with, and myself being in place, her Majesty gave them me with the express charge that I should send them to you this day again dyner, desiring you to eat them for her sake. Since Sir Robert Cecil begged them of me I could not deny him of.'

Charges for hawks appeared regularly in the Cecil estate accounts at Theobalds, and later in those of Hatfield. The following is a specimen bill at Theobalds (Edwardes bill):—

Paid for 2 dozen pidgeons for hawks, 4s. 6d.; meate for pidgeons, 4s. 6d.; yeard

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of flannell, 1s. 2d.; for empynge¹ ould Haggard, 2s.; my expenses when Jerkin was lost, 1s. 5d.; my horse shoeing, 1s. 4d.; two mallards, 1s. 1d.; two sheeps heartes, 2d.; crossing the river, 2d.; charges for horse and self when Haggard was lost, 1s.; paid unto one for taking up Haggard, 14d.; meate for Spanyells, 12s.; bells, jesses, buetts, hoods, etc., 6s. 8d.

When on a country house visit in those days it was customary for the falconer with his hawks to accompany his master. William Clayton's expenses when accompanying the first Earl of Salisbury on a visit of four days to Windsor amounted to 29s. 8d., and the items appear among the Hatfield records. Constant references are also made in these old records to the giving and receiving of choice hawks as presents, to the wonderful exploits they performed (one having killed three partridges at one flight) and as to the best places for procuring them. Sir Nicholas Welshe of Dublin gave an eyrie of falcons to the Cecil family, and other celebrated hawks were purchased in Denmark. Sir Robert Cecil's son kept up the sport of hawking with great zest, and regularly took his hawks to Newmarket, apparently to fly matches against other falconers.

A large number of spaniels were kept at Theobalds and Hatfield for the purpose of finding the game for the falconers. The Hatfield hawks appear to have been held in high esteem, for we find that the Earl of Rutland, writing to Lord Salisbury, begs him to send some of his hawks, saying, 'I beseech you for your hawks, I hear you over fly all England, I will promise you game in great quantity'; and in another letter he asks him again to bring his hawks, 'for I have no falconer, though a very great falconer myself;

but you shall hear me, *au plus fort de la meslee* in my profession, in your bed without more trouble, but the hearing the jubets of huntsmen, the horns and the cry of the hounds, and my little girl's crying "Whoo, whoop." Then in the afternoon I shall wait on you in another shape or dress; the horn *à bas*, the lute comes on and in lieu of the *loup onc*, the *soyez, soyez, resondez*.'

In 1826 Sir John Sebright of Beechwood (whose son Thomas was master of the Hertfordshire hounds) wrote a treatise 'on the mode of treating and managing of the several kinds of hawks used in falconry.' He writes of the science of hawking as being at that time nearly extinct, and alludes sadly to the fact that he knows of but one surviving falconer able to practise the ancient art according to the old school of falconry. When using a falcon for partridge hawking, it is necessary, he says, to select open country for the sport, but should enclosed country be unavoidable, he advises that one of the smaller hawks, for instance a goshawk, should be used; but he is strongly opposed to the use of the goshawk for partridges, knowing that probably only the young and immature birds would be killed by the hawk, and that the full grown ones would be able to fly fast enough to escape their pursuer. He describes partridge hawking as follows: 'When the partridge is marked down or pointed, the hawk is unhooded and cast off. He will fly round the falconer and if a good one mount a considerable height, the higher the better. He hovers and makes his point. The falconer then approaches alone and with great care and by whistling, as at feeding time, he grasps the falcon while his prey is in his talons, he is given the head of the partridge to eat and is then hooded again.'

STEEPLECHASING

One of the most conspicuous sporting figures in Hertfordshire was the celebrated trainer, Tommy Coleman. He first came into the county in 1816 and trained race-horses at Brocket Hall Park until about 1820, when he moved to St. Albans and re-built and re-named the Chequers Inn in Chequers Street. As the 'Turf Hotel' this inn for the next twenty-five years became the headquarters of all kinds of sport on the northern side of London.

Here Mr. Osbaldeston played billiards for a

whole week with a noted billiard sharper and lost £3,000. Here Lord George Bentinck, Prince Esterhazy, Mr. Gully, Mr. Tattersall, Colonel Charritie, Mr. Heathcote and others kept their racehorses. From here Coleman collected £30 (each magistrate of the St. Albans bench contributing £1) to get the notorious fight between Deaf Burke and the Irish champion, Simon Byrne, held on No Man's Land on June 2, 1833, and after which Byrne died.

Here were also the headquarters of the eccentric Lord Huntingtower, and of Captain Becher of steeplechase notoriety, after whom

¹ Mending broken pinion.

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Becher's Brook in the Grand National course at Liverpool is named. It was here that Coleman introduced the bastard sport of hurdle racing 'to please the ladies.'

At this hotel the idea of the first regular steeplechase run in England originated in 1830, with some officers of the 1st Life Guards, who put it into Coleman's hands to carry out. The articles were drawn up for a sweepstake of 25 sovereigns each, for all horses carrying 12 stone, over not less than four miles of fair hunting country to be selected by Mr. Coleman within forty miles of London, no rider to know the line until the moment of starting, no rider to be allowed to pass through an open gateway or to go fifty yards down a road or lane.

The novelty found favour with the young men of the day, and there were soon a goodly number of entries for the race. On March 8, 1830, the following horses and riders appeared at the post :—

| | |
|------------------------------------|--------------------|
| Lord Clanricarde's ch. g. Nailor . | (Owner) |
| Lord Belfast's ch. m. Miss Doodle | (Mr. Haines) |
| Lord Ranelagh's br. g. Bully . . | (Owner) |
| Lord Ranelagh's gr. g. Wonder . | (Capt. Macdowall) |
| Mr. Angerstein's br. g. | (Owner) |
| Mr. Angerstein's b. h. Tatler . | (Capt. Becher) |
| Mr. G. Bulkeley's b. g. Giraffe . | (Mr. Stubbs) |
| Mr. Bayturn's Mowbray | (Mr. White) |
| Mr. Cosby's br. g. Gambler . . | (Owner) |
| Mr. Codrington's b. g. Topthorn | (Owner) |
| Mr. Nesbitt's bl. g. Blacksall | |
| Black | (Owner) |
| Mr. Rothschild's President . . | (Capt. Blane) |
| Mr. Streathfield's b. g. Teddy | |
| the Tiler | (Owner) |
| Mr. Thornhill's Peveril of the | |
| Peak | (Owner) |
| Mr. Wombwell's br. g. Rocking- | |
| ham | (Hon. A. Berkeley) |

Coleman started them from the hill on which Harlington church stands, and the winning post was the Obelisk in Wrest Park. Half a mile from home the competitors were straggling widely apart. Captain Macdowall on Wonder arrived at the Obelisk first, Rockingham second, Nailor third, Miss Doodle fourth.

Thus ended the first organized steeplechase that was ever run in England. The popularity of the sport was fully established by this race, and for the next eleven years the St. Albans steeplechase, under the management of Coleman, became an important fixture in the Sporting Calendar. The town benefited greatly, as many people resided there for weeks both before and after the race.

The following year, 1831, the race was won by Moonraker, a good animal, a tre-

mendous puller with great powers of fencing, and 'the best winded horse in the world.'

Moonraker also won the race in 1832, beating Grimaldi by half a length. The start was at Ellen Brook Green on the Hatfield road, and the winning post at an elm tree in a paddock at the bottom of Coleman's stable yard, near to the present junction of Victoria Street and Latimer Road, St. Albans. During this race Moonraker made some of his big jumps. When near the finish of the race he cleared two fences and a lane between them, and when jumping the last fence he cleared 33 feet.

This race is commemorated by a series of coloured engravings, with a key giving the names of the people and the horses depicted.

The outcome of this race was a match for £1,000 between Moonraker and Grimaldi, which Grimaldi, ridden by Mr. Osbaldeston, won easily.

In 1833 the horses started at Tyttenhanger House, finishing at Beaumont's Farm. Antelope first, Skyscraper second.

The winner in 1834 was a horse called The Poet, who had run third in the St. Leger, and was the property of the Rev. Lord Frederick Beauclerk, vicar of St. Michael's church, St. Albans. He ran in Mr. Brand's name, 'as the Bishop of the Diocese might have objected' if he had run in the vicar's own name.

Lord Frederick was also a noted cricketer, playing for the Gentlemen against the Players, and was a member of the celebrated B. eleven.

Jem Mason rode The Poet, this being the first public appearance of this celebrated jockey.

The steeplechase of the year 1836 was also commemorated by a series of four prints which are known as the 'St. Albans Steeplechase.' The horses started at Harpendenbury and finished near the Gorhambury Lodge, not far from St. Michael's church. The race was won by Mr. Elmore's gray horse Grimaldi, ridden by Captain Becher, and in one of the pictures Grimaldi is depicted fallen just after passing the winning post. He fell dead.

The Hon. Frederica Beauclerk wrote some verses on the death of Grimaldi, taking as her text Scott's lines—

Woe worth the chase, woe worth the day
That cost thy life, my gallant gray.

One verse ran—

The racers pass the eager throng,
They shout, Grimaldi's won a head !
But in this world what joy lasts long ?
Ah, woe is me—Grimaldi's dead !

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Although Coleman was the originator of steeplechases in England, he only trained one horse for one steeplechase, and in later years expresses great contempt for the modern steeplechase. He says in his *Recollections*, 'I established steeplechasing to show which was the best hunter and the best man over a country to run at the end of the season before horses were thrown out of condition; and hurdle racing as a change at country races to amuse the ladies. Steeplechasing is a farce now over these cut down fences.'

Some years before the first steeplechase was run at St. Albans, matches across country were common, and we read of one in 1830 between Mr. Byles, representing the Hertfordshire Hounds, and Mr. Hudson, representing the Puckeridge, over six miles of country, finishing at the Monument, Little Berkhamstead, which was won by Mr. Hudson.

Besides the St. Albans Steeplechases, meetings were held at Hertford, Ware and Harpenden for steeplechases from the year 1838. The Old Berkeley Hunt have held a steeplechase meeting intermittently for a number of years at the end of the hunting season.

The Hertfordshire have for a number of years finished the hunting season with a very popular meeting at Harpendenbury. These races are half steeplechases and half point to point races, that is to say, the race is round three flags which are so placed that the horses have to pass the winning point twice during the race, which gives the spectators a good view of the race, but which would probably have been viewed with contempt by the late Tommy Coleman. The races are limited to horses which have *really* been regularly hunted with the hounds during the season.

RACING

Flat racing has long been popular in this county. The first races we hear of are the Odsey Races, established as far back as James I.'s time, and probably before. The original course was along the level land by the side of the Baldock road near Odsey, but as time went on the course was brought nearer to Royston. In the later years of the last century the course lay just beyond King James's stables, which building was afterwards called the Jockey House.¹

In September, 1766, we read that 'never was finer sport seen. That betting even then was connected with race meetings is evident, for 'the knowing ones were pretty deeply taken in.' Here as elsewhere the patrons of racing often finished up the day with cockfighting or wrestling. Several villages near Royston were famous for these wrestlers. These wrestling matches generally ended in a free fight between the followers of the respective champions.

The Royston Races were revived in George II.'s reign. In the spring of 1827 it is recorded that Royston Heath was much crowded to witness a match between a mare of Sir Peter Soame of Heydon and a horse of Mr. T. Berry of Hertingfordbury. Other matches were run by hunters belonging to those present. The revived races at Royston were held in May, whereas the old Odsey Races took place in September.

In 1836, when Lord Hardwick and Mr. Brand were stewards, five or six thousand

¹ *Fragments of Two Centuries*, by Alfred Kingston (Royston, 1893).

people were present; and as to the character of the gathering, we are told 'the usual attendants of all amusements of this kind were there, and succeeded in victimizing a few who were green enough to fancy they had a chance of increasing their funds on the race course.' Genteel and respectable at first, these races became of less repute as time went on, and were associated with many disagreeable incidents; and their abolition about twenty-seven years ago was welcomed by most of the inhabitants of the district, owing to the scenes of disorder and shop robberies in the town which marked the moribund stage of the gathering.

The *Sporting Magazine* for 1791 gives a description of some races at Aldenham Common, Herts, at which there was 'excellent sport.' One at least of the events was run in heats, and the winner that year was a horse called 'Smuggler,' belonging to a Mr. Brooks of St. Albans. This horse had to run no less than six heats before he was declared the winner.

The Barnet race meeting was one of the first held in the county. It was discontinued for several years, but reinstituted in 1793. In the next year the meeting there appears to have been rowdy beyond description. One man for a bet walked out of an upstairs window and was killed, and his widow claimed the money. Another man for a bet galloped on a horse up High Street with his hands tied behind his back, and had his brains dashed out against a lamp-post. The accidents that occurred to drunken

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men on their return from the races were of course numerous, and cock fighting was freely indulged in when nothing else was going on.¹

The last Barnet races were held on September 6, 1870, when Mr. Hodson's Poleaxe won the principal race. The races finished where High Barnet railway station now stands.

Race meetings were held intermittently at Berkhamstead, Dunstable, Ware, Northaw, Tring and Wormley at different periods between 1729 and 1769.

In August, 1804, a two days' race meeting was held at Bushey Meadow near Watford, and Lord Clarendon was the breeder of the winner of the Galloway Races.

The Bocket Hall Races also appear in the *Racing Calendar* from 1804. When Lord Melbourne lived at Bocket he kept open house. George IV, as prince regent, always attended this race meeting and ran horses there, as did Sir John Shelley, Sir Charles Bunbury and other leading men on the turf. Bocket Park was used in 1816 as a training ground for a few racehorses by the well known trainer, Thomas Coleman, when he first came into Hertfordshire in that year.

In 1820 Lord Verulam allowed Coleman to train his horses in Gorhambury Park, and shortly afterwards Coleman took the Chequers Inn at St. Albans, where he built large training stables, and was employed to train horses for Lord George Bentinck, Lord Verulam and many other well known racing men.

GORHAMBURY RACES. In 1829 Coleman held a race meeting at No Man's Land near St. Albans. He persuaded King George IV to run a horse in the Gorhambury Stakes, which his Majesty won. The meeting at No Man's Land not having been a financial success, Coleman induced Lord Verulam the next year to allow the meeting to be held in Gorhambury Park. This meeting proved very successful, and from 1830 until the death of Lord Verulam in 1845 the meeting was regularly held for two days each year, between the Epsom meeting and Ascot, and was patronized by all the leading members of the turf.

The following account is given in the *Sporting Magazine* of the races held there in 1844: 'We have often written about this agreeable diversion, the easy distance from London, the magnificent park wherein the running takes place, surrounded as it is by the most picturesque scenery, the easy modes of access, it is calculated to afford induc-

ments to an agreeable trip for a pleasant party. Amongst those present were the Duke of Rutland, the Marquises of Exeter and Worcester, the Earls of Clarendon, Chesterfield, Albemarle, Sefton, Craven, Stradbroke, Maidstone and March, Lords Macdonald, Glamis, E. Fitzclarence, etc., etc.' The racing lasted two days, and the stakes were named the Craven, the Gorhambury Handicaps, the Præ Stakes, the Pondyards Stakes, and the St. Albans Handicap. The horses in the latter race had to be ridden by officers in the army or navy, or by members of White's, Brooks', Boodle's and a few other clubs, including the Herts Hunt Club. A whip was subscribed for by the ladies, to be given to the rider of the winner. Upon this day, May 22, 1844, the winner was ridden by Captain Clark, who 'immediately received the whip from the fair hands of the lovely lady Jane Grimston, who complimented the winner on his *improved* horsemanship.'

Lord Verulam's horse, Robert de Gorham, which had run third in the Derby, ran at these races.

After the death of Lord Verulam in 1845, Coleman bought the Lilley Hoo Farm, and continued to train there until he retired and went to live at Barnet, where he wrote his interesting *Recollections*, which were published in *Baily's Magazine* in 1876 and 1877. Coleman, who died in 1877 at a great age, was a man quite out of the common—a man of original ideas and of great observation.² Born in a humble position, he raised himself by sheer force of will and intellect, and from riding gallops as an exercise lad he became the trusted councillor on matters connected with horseflesh to some of the greatest men of the time.

Lord Verulam bred many good horses, and 'Gorhambury,' bred by his lordship, ran second for the Derby in 1843.

THE HOO RACES. From 1831 to 1836 flat races were run at The Hoo, Kimpton, during Lord Dacre's mastership of the Hertfordshire Hounds, but they were only open to farmers living in the county or to members of the hunt. After the Hoo Races were given up, a £50 plate was given by the hunt to be run for by farmers in the Hertfordshire Hunt country at the Harpenden Races. But this failed to attract farmers' horses, so it was discontinued, and point to point steeplechases

² He was a great advocate for the more natural treatment of the racehorse, which has quite recently been so successfully adopted in this country by the American trainers.

¹ *Sporting Magazine*, 1794.

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have latterly been held for farmers and members of the Herts Hunt at the end of the hunting season.

THE HARPENDEN RACES

This meeting is the only one in the county that has survived the test of time and fashion. The first meeting was held in the year 1848, and it has been held continuously ever since. At one time it was considered quite an important meeting, coming as it did on the Friday before the Derby, and many were the favourites for that race that were 'knocked out' at the Harpenden meeting. Of late years however the number of race meetings has so much increased that several other races are held on the same day, and Harpenden now enjoys the reputation of being a small meeting with a well behaved local crowd, differing much from the rough

crowd of a few years back who turned the Harpenden meeting into a byword of ruffianism. In close proximity to the Harpenden racecourse is the fine stud farm of Sir John Blundell Maple of Childwickbury, established some ten years ago. It is built on the most approved modern lines, with boxes and paddocks for about 200 horses. It is the home of some of the best bred thoroughbred mares in the kingdom, but has not up to the present time produced any phenomenal racehorse.

There are several smaller stud farms in the county where racehorses are bred, such as Holwell near Hatfield and Mr. Forest Tod's farm near Shenley.

But in times gone by at least one Derby winner has been owned by a Hertfordshire man. Mr. Snewing, who lived near Watford, was the owner of 'Caractacus' (an appropriate Hertfordshire name), who won the Derby in 1862.

COURSING

In tracing the history of coursing as a national sport, and in comparing its development to that of other sports of less ancient origin, one notices with surprise how strangely consistent the advocates of coursing nowadays are to the rules of the sport and to the manner of conducting it as laid down by their ancestors. As long ago as 150 A.D. Arrian describes the mode of beating the ground to find the hares, and the mode of letting loose the greyhounds to chase them; also the practice of some sportsmen of following the hounds on horseback, and of some of watching the course as best they could on foot drawn up in a line. And such points correspond almost exactly with what is done at the present day.

Coursing was popular in Hertfordshire from the earliest days of her sporting history, and, as usual, we can turn to the annals of Queen Elizabeth's reign and find items of interest connected with it.

The queen herself used greyhounds at Hatfield, and we read of her stationing herself, when not disposed to hunt, so as to get a good view of the coursing of the deer.

The 'Laws of Coursing' were drawn up by the Duke of Norfolk by order of Queen Elizabeth, and were agreed to by the nobility and gentry who followed the diversion in her reign, and these were recognized for many subsequent years.

James I. was devoted to coursing, but considered it inferior as a sport to hunting with a pack of hounds. He often enjoyed watch-

ing the coursing on the Royston downs, and kept up the state and dignity of the 'keeper of the greyhounds,' which was one of many posts held by courtiers attached to the court.

Many more or less private coursing meetings have from time to time been held in this county, but no public coursing club has ever existed for very long. Lady Salisbury at the beginning of last century held a meeting at Hatfield every year. On the first two days of the meeting the matches were run between her own hounds and those of her friends, but on the third day she permitted the public not only to be spectators of the sport, but also to enter and run greyhounds for the stakes.

A picture of this coursing meeting at Hatfield was painted, and several coloured engravings of it are to be found in the county. These engravings are very interesting, as showing some of the practices of coursing in those days, and in depicting the costumes worn by the ladies and gentlemen about 100 years ago. It is a gay scene. About 150 to 200 gentlemen and ladies on horseback are watching the sport, the former in full hunting costume and the latter in long flowing habits. Lady Salisbury herself leads, in her sky-blue habit, which was the livery of the Hatfield Foxhounds, of which she was mistress at that time. It is difficult to understand how she could have ridden as hard across country as she was reputed to have done in such a garment as the excessively long habit in which she is depicted in this engraving. Besides the riders there are many pedes-



From an old print.

COURSERS TAKING THE FIELD AT HATFIELD PARK.

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trians, most of them in tight breeches and boots, and keepers in full uniform leading the greyhounds in slips.

Undergraduates from Cambridge, at the end of the eighteenth century, were apparently in the habit of coursing in the Royston neighbourhood without asking the leave of the occupiers of the land, for we find an advertisement in the *Cambridge Chronicle* of 1787 commencing, 'We poor farmers round Roy-

ston do most humbly beg the favor of the Cambridge gunners, coursers and poachers to let us 'get home our crops,' etc.

The last remaining coursing club in the county is the Watford Club, which has now changed its name into the Mid-Herts Coursing Club. They course in the parishes of Aldenham and Shenley; but the Club is now reduced in numbers, and no greyhounds of note have of late years run at these meetings.

PUGILISM

The most celebrated prize fight that ever took place in Hertfordshire was between John Gully and Bob Gregson for the championship of England. Gully's career was an extraordinary one. Born at Bristol in 1783 and brought up as a butcher, he came to London to try his fortune, but soon found himself imprisoned in the Fleet for debt. Here he was 'discovered' by a prize fighter named Pearce, who arranged his discharge simply in order to fight him. Gully made a good show, and was so successful as a prize fighter that he was able eventually to dub himself champion of England. Upon this Bob Gregson, of Lancashire, threw down the gauntlet, and a fight was arranged to take place between the two in Buckinghamshire.

The Marquis of Buckingham however, being at that time Custos Rotulorum of the county, interfered, and gave notice that he intended to stop the fight. Early in the morning of May 8, 1808, the day fixed for the contest, a council of war was held between Lord Stanley and Major Morgan on the one side, who had brought Gregson over in their coach, and Mr. Akers on the other, who had driven Gully to the rendezvous with his team of thoroughbred blacks. It was decided to accept the offer of Sir John Sebright, who placed his park at Beechwood in Herts at the disposal of the combatants. The ring was pitched at twelve o'clock, the inner ring being 24 feet, whilst an outer roped space of 48 feet square surrounded it. Each spectator had to pay 3 guineas. In the annals of pugilism it is not easy to find record of a greater field day for the 'fancy.' Besides the great event two other battles were to take place in the same ring. The excitement prior to the event was tremendous. Every one, from the Prince of Wales downwards, was anxious to hear the latest intelligence from the training quarters. Both men were fine specimens of humanity and were equally matched in height and strength. For a long time the battle was so even that no one could

tell which was likely to win, but eventually the cool-headed scientific Gully proved too clever for Gregson, and in the seventeenth round held Gregson's head in chancery and dealt him such a succession of blows that his face was cut to ribbons and one of his eyes completely closed up. Notwithstanding this punishment Gregson fought pluckily until the twenty-fourth round, when Gully dealt him a blow that threw him senseless on the ground.

After this fight Gully, the champion of England, retired from the prize ring and turned his attention for a short time to the public house business. Later on he became a successful bookmaker and owner of racehorses, many of which were trained by Tommy Coleman, Gully himself being a frequent resident at the Turf Hotel at St. Albans kept by that celebrated trainer. In 1832 a horse of Gully's won the Derby, but this distinction was not the last in his varied career, for he was returned as Member of Parliament for Pontefract, and lived till he was eighty, respected by all who knew him.

The magistrate and the constable did not in those days interfere very much with prize fighting, the result being that elaborate arrangements were openly made both for the convenience of the combatants and for the comfort of the spectators. Royston Heath was very often the scene of these battles, and Sir Peter Soame, a gentleman of the Privy Chamber of King George III.'s household, was an ardent promoter of the sport. At his house at Heydon many a roistering gathering of the sporting fraternity took place, and he himself was always ready to have a fight even with the best of the pugilists.

On one occasion a local butcher known as the 'fighting butcher' called at Sir Peter's house to demand payment of a small sum of money. Sir Peter went down into the kitchen and asked the butcher if he cared to fight for the money he owed him. The butcher consenting, the money was deposited,

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sawdust was brought into the kitchen, and the butcher and the baronet stripped and set to, with the servants looking on to see fair play. The fight was furious at the outset, but the butcher was soon defeated by the superior science of the baronet and had to depart without his money.

The most memorable prize fight that took place on Royston Heath was the contest between Jem Ward and Peter Crawley for the championship on January 2, 1827. This event was the occasion of the greatest excitement, and the concourse of people that assembled at the lower end of the cricket ground was enormous. From ten to fifteen thousand persons were there, including all classes of society. Crawley stood 6 feet 2 inches in his stockings and Ward 5 feet 9 inches. The fighting took the form of such a furious onslaught upon each other that in twenty-six minutes and after eleven rounds both men were completely exhausted. Crawley had his cheek laid open and both eyes nearly closed, but Ward could not stand, and thus he lost his champion belt.

Another well remembered prize fight took place between Owen Swift, a practised hand, and 'Brighton Bill,' a young inexperienced fighter of only twenty years of age. This took place in the year 1838 at Barkway, and it created an immense amount of interest. After a brutal exhibition the unfortunate young man from Brighton simply allowed himself to be pummelled to death, the outcome being an inquest and a trial for manslaughter at the Herts Assizes. A verdict of manslaughter was returned, and the jury expressed their deep regret and concern that the magistrates of Hertfordshire had not interfered to prevent a fight which for some days

previously had so notoriously been expected to take place. The fight caused many persons in the neighbourhood to look with suspicion and shame upon the so-called 'noble art of self-defence,' and to turn with disgust from such exhibitions of brutality.

Fights at Royston Heath have since 1838 been few and far between, and have only been carried out at great risk of apprehension of the principals and their abettors.

A notorious battle took place on May 30, 1833, on No Man's Land, 'the arena of many a gallant encounter,' between Simon Byrne and Deaf Burke. Byrne was champion of Ireland. After a battle lasting for three hours and sixteen minutes, during which no less than ninety-nine rounds were fought, Burke was declared the winner. Byrne, who was knocked out of time, was taken to the Wool Pack Inn at St. Albans, where notwithstanding the best medical skill, including Sir Astley Cooper's, he died four days later. Burke and his seconds were tried for manslaughter at the Hertford Assizes, but were acquitted on the evidence of the doctor, who said that Byrne's death was not caused by the injuries he received from the battle.

It is a curious coincidence that Simon Byrne had caused the death of McKay, the Scotch champion, on the same day of the month three years previously.

Many other battles of less importance have been fought in Hertfordshire at Harpenden, Colney Heath, and on other open spaces, especially those on the confines of the county, where it was easy to cross over into another county to escape the police.

The Park Hotel, No Man's Land, has been until quite recently a favourite training residence for pugilists.

COCKFIGHTING

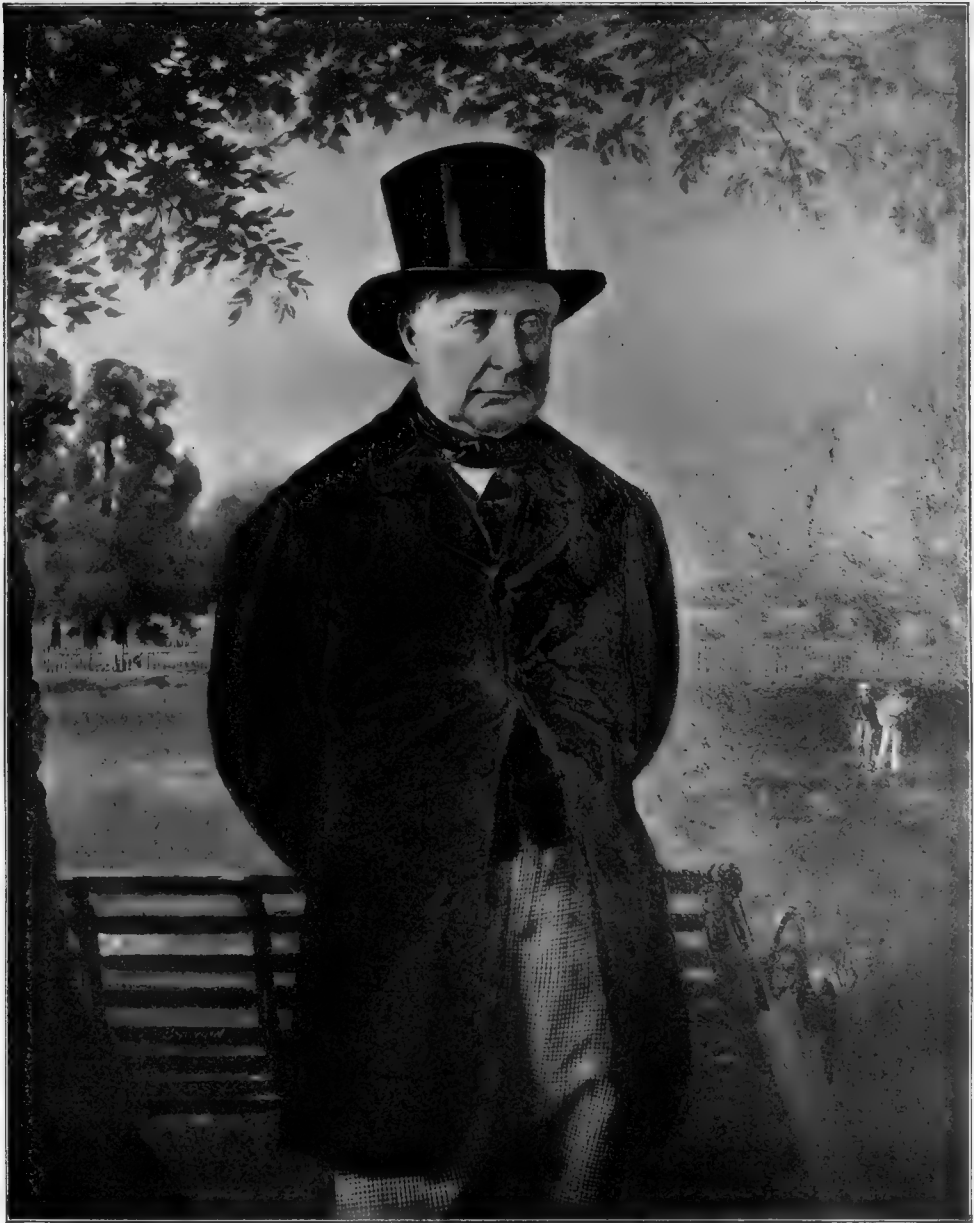
The origin of this sport is curious. It is said that in the year 476 B.C. when Themistocles was marching with his army against the barbarians, he saw two cocks fighting. He halted his army and thus addressed them: 'These cocks are not fighting for their country or for their paternal gods, nor do they endure this for the monuments of their ancestors or for the sake of glory in the cause of liberty or for their offspring; their only motive is that one is determined not to yield to the other.' After this episode the Athenians made a law that one day in every year should be set apart for an exhibition of cockfighting. This Athenian law became the custom in England,

Shrove Tuesday being the day set apart, and cockfighting was carried on through the length and breadth of England on that day until the year 1795, when it was suppressed.

The pupils of the City of London Schools used to club together and present their masters with cocks to fight on Shrove Tuesday mornings.

This county was well known for its love of the sport, and we find spots pointed out on most of the Hertfordshire commons as the scenes of historic cockfights. There is also a spot in Gorhambury Park that is still known as 'Bacon's cock pit.'

It was also customary at inns to have



THE HON. ROBERT GRIMSTON.

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mains between cocks belonging to gentlemen of different districts. We read of mains at the Harrow inn, Barnet, between the cocks of the gentlemen of Barnet and those of the gentlemen of Hatfield for stakes of the value of two guineas a battle and twenty guineas on the odd.

Royston Heath was a favourite place for 'cocking,' as it was always called in the last century, for cocks belonging to the gentlemen of the Hertfordshire side of the town against those of the gentlemen of the Cambridgeshire side. Indeed it would be impossible to understand the social life of the period without taking into account the universal popularity of cock-

fighting. Often the stakes took the form of a fat hog or fat ox, and the technicalities of the sport read something like this: 'No one cock to exceed the weight of 4 pounds 10 ounces when fairly brought to scale, to fight in fair repute, silver weapons and fair main hackles.'²

Another important main upon which large sums of money depended was fought at Colney Heath in 1796 between the gentlemen of Barnet and the gentlemen of St. Albans for five guineas a battle and twenty guineas on the odd.

Mains were often fought at the 'Fighting Cocks' inn, St. Albans.

BULL-BAITING

This was apparently a favourite sport in Hertfordshire. At St. Albans there was a bull-ring in the sixteenth century near the market place,¹ and among the miscellaneous accounts in the rolls of quarter sessions for this county

for 1776 we find that the chief constable made a charge 'for attending to prevent a bull-baiting which was publicly cried to be at the Earl Cowper's Arms in the parish of Hertingfordbury on the day after Christmas last.'

BOB GRIMSTON

No history of sport in Hertfordshire would be complete without some reference to the Hon. Robert Grimston, son of the first Earl of Verulam, generally known as Bob Grimston, born 1816, died 1884.

In his nursery days he is described as not exactly a thorough going pickle of a boy, but as one of determined will and deep thought, who having once taken a thing into his head could not be persuaded to relinquish it in spite of all that nurse or governess might say or do. And so he was through life.

No sport or pastime came amiss to him. From early youth he had taken part in all kinds of sport at his Gorhambury home, but it is as a rider and as a devotee of Harrow School cricket that his name will be best known to posterity.

He began riding matches across country when only a boy at Harrow, and as he grew older many were the races he rode, and many were the bad falls he took. However he managed to live through them all and rode hard up till the last year of his life.

A friend of the Dowager Lady Verulam, who often visited her in London, used to say that at one time in Bob Grimston's career the following announcements had become of almost weekly occurrence: 'If you please,

my lady, Mr. Robert has been brought home on a shutter again.' Bob Grimston hunted chiefly in the Aylesbury country, but he served his apprenticeship with the Hertfordshire Hounds, and many of his exploits took place in the Harrow country on the borders of Hertfordshire. His broad-brimmed black hat, worn well at the back of his head, tied under his chin with a black ribbon, his long jack boots and determined though kindly face presented a picture not easily forgotten.

Mr. Grimston spent nearly every afternoon during the school cricketing term at Harrow, and was if possible more of a Harrow boy in his latter years than he was in his former. He had an intense love of Harrow and of all that concerned its history, traditions, masters and boys; and many well known cricketers owe him a debt of gratitude for having 'discovered' and encouraged them when only lower boys at the school. One verse of a beautiful memorial poem written by the well known Harrow master, Mr. E. E. Bowen, sums up the sterling worth of his character—

Well played. His life was honeste than ours;
We scheme, he worked; we hesitate, he spoke;
His rough hewn stem held no concealing flowers,
But grain of oak.

² *Fragments of Two Centuries*, by Alfred Kingston (Royston, 1893).

¹ *Trans. St. Albans A. and A. Soc.* (1893-4), p. 15.

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CRICKET

Cricket has been identified with the county of Hertford for more than a century. In the early annals of the game it is recorded that England played twenty-two of Hertfordshire and Essex at Stoke Down in Hampshire, July 8, 9, 10, 11, 1793, the return match taking place at Lord's the following week. England won both contests, the former by an innings and 21 runs, and the latter in one innings and 129 runs. The majority of the England team consisted of players belonging to the once famous Hambledon Club, in fact the *Hampshire Chronicle*, in recording the contest, designated the winning side as the Hambledon Club.

Five years later Hertfordshire met the county of Middlesex in an eleven a side match at Lord's, the metropolitan county proving victorious by 93 runs. Clubs were now being formed in several parts of the county. In 1798 in the Mill Mead at Ware, Ware played Waltham Abbey and the result was a tie match, the totals being Ware, 1st innings, 35; 2nd innings, 12. Waltham Abbey, 1st innings, 18; 2nd innings, 29. In 1800 a club existed at Hatfield, while in 1803, 1805 and 1806 matches were played between St. Albans and Rickmansworth.

The year 1814 has an event particularly interesting to this county, for in the first recorded match that was played on the present ground at Lord's on June 22, Hertfordshire, with H. Bentley, contended against the Marylebone Club. The scores were: Hertfordshire, 1st innings, 79; 2nd innings, 55. M.C.C., 161. The M.C.C. thus won by 1 innings and 27 runs.

Ten years later, at No Man's Land, in the county of Herts, Watford with the assistance of two crack players (Ashby and Caldecourt) opposed Hertfordshire. The first match took place on August 18, Watford being victorious by 104 runs, while in the return engagement at Watford the Watford players inflicted a severe defeat, the county being beaten in one innings and 33 runs. In 1828, for the same town against the county, W. Caldecourt hit six sixes in one over in a very small ground at Watford.

In the 'thirties' capital matches were contested at Hitchin between the Hitchin Club and Hitchin Priory, the latter having the assistance of Lord Grimston and his two brothers, the Hon. R. and E. H. Grimston, the three being keen cricket enthusiasts. In 1835 Harrow Town twice beat Chorley Wood, John Woodbridge bowling all the

wickets in one innings except the one run out.

At Lord's in 1835 Hertfordshire defeated the M.C.C. by 2 wickets, while the following year at Lord's on July 18 and 19 the Gentlemen of Hertfordshire, with the assistance of T. Barker, tried conclusions against the Gentlemen of England, the county representatives winning by 153 runs. In this match there were no less than 119 'extras' recorded.

In 1837 the Gentlemen of Herts, with Cobbett, played Cambridge University at Lord's, the former being victorious by 105 runs. It was a win, however, mainly owing to the all-round play of Cobbett who scored (for once out) no less than 148 runs and captured 12 wickets.

Matches about this time were frequent, and in 1841 two capitally contested games took place between Hatfield and Herts. The first, at No Man's Land on August 23, 24, resulted in a win for the county by 70 runs. In the return, played in Hatfield Park, Hatfield won by 9 wickets. The same year, on Barnard Heath, Welwyn played the St. Albans Club, the former winning by 31 runs. In this fixture Mr. J. W. Otway for the victorious side captured no less than 17 wickets. Excellent cricket was played by the Redbourne Club, especially in many of the famous contests with the powerful Southgate Club, the latter being almost entirely supported by the celebrated cricket family known as the 'Walkers of Southgate.'

In 1844, at Redbourne, Hertfordshire tried conclusions against the M.C.C. The Marylebone Club included in their ranks three of the crack bowlers of the day, viz. William Lillywhite, W. Hillyer and Jemmy Dean, the visitors winning by 7 wickets. The same year, at Redbourne, East Hertfordshire met West Herts, the latter winning by an innings and 10 runs, while the following year at Redbourne, Herts lowered the colours of the first club in the land (M.C.C.) by 44 runs. In this fixture the Hon. E. H. Grimston for the county played a valuable not out innings of 43. Hertfordshire in September, 1852, at Rickmansworth were defeated by Clapton with 4 wickets to spare.

A well contested match took place at No Man's Land, August 28, 29, 1855, between the two divisions of the county, East Hertfordshire being victorious by 2 wickets. In this fixture Mr. H. Fellowes and Mr. H. W. Fellowes participated for West Herts. Both

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were famous cricketers, the family home being at Rickmansworth. Mr. Walter Fellowes was a slashing batsman. While at Oxford in 1856 he hit a ball in practice off Rogers which fell at the distance of 175 yards to the pitch. He formed one of the Gentlemen's eleven against the Players of England in 1855, 1856 and 1857, but only made 21 in six journeys to the wickets.

Mr. Harvey Winson Fellowes was the elder brother. He too was a punishing batsman, but he was chiefly famous for his terrific fast bowling, being chronicled in verse thus—

And Fellowes, whose electric speed with due precision blends.

He formed one of the Gentlemen of England against the Players in 1847, 1848, 1849, 1850 and 1851, scoring 37 not out in 1848, and taking 7 wickets in 1849, when W. Lillywhite refused to face his deliveries. In September, 1848, for I Zingari *v.* Gents of Worcestershire he hit Nixon 132 yards before the ball pitched. In later years he raised his arm and bowled slower.

In the year 1863 on the ground near the railway at St. Albans an eleven of England contended against twenty-two of Hertfordshire. The match, which was played for the benefit of Benjamin Roberson, was unfinished, the totals being England, 1st innings, 77; 2nd innings, 37. Twenty-two of Herts, 68 and 33 for 9 wickets. Two years later the United South of England eleven played twenty-two of St. Albans, the local players winning by 10 wickets.

At Lord's in May, 1870, Hertfordshire again met the M.C.C. The two clubs had been opposed as far back as 1814.

At Gorhambury on August 12, 1871, in a twelve-a-side contest between I Zingari and Hertfordshire, Hughes and J. Silcock proved too much with the ball for I Zingari, dismissing the visitors in the first innings for 44, and in the second venture for 79. Herts scored 108 and 17 for 1 wicket, winning by 9 wickets. The following year however at Lord Verulam's seat (Gorhambury) the tables were turned, I Zingari being victors by 5 wickets.

In 1873 'W. G.' visited Herts and played on the side of M.C.C. against the county at Chorleywood, the crack club winning by 111 runs. 'W. G.' for the victors scored 47 and 26, and captured 12 wickets.

A match at Alexandra Park in July, 1873, between teams styled Middlesex and Hertfordshire, resulted in a victory for the latter by 173 runs.

A finely contested game was the match

with I Zingari at Chipperfield in August, 1873, Herts, owing mainly to the excellent bowling of Hughes and Good-year, winning by 25 runs. Two years later at Chorleywood witnessed yet another close game. The fixture was Herts *v.* M.C.C. Sixteen cyphers were made, the scores being M.C.C., 60 and 63; Herts, 19 and 90. Only 232 runs were made for 40 wickets lowered. John West and Rylott were the bowlers for the victorious visitors.

In 1876, Mr. C. E. Keyser, the hon. secretary, was instrumental in arranging a capital match at Cashiobury, the fixture being Mr. Keyser's Eleven *v.* Gentlemen of Herts with the two Westells. Mr. Keyser's side included Mr. G. H. Longman, the Old Etonian and Cambridge batsman; Mr. A. W. Ridley, Eton and Oxford; and Mr. S. E. Butler, Oxford. Mr. Keyser's side won by 9 wickets, Mr. A. W. Ridley being very effective with bat and ball.

In order to place the Hertford County Cricket Club on a more substantial and popular basis a public meeting was held at the Town Hall, St. Albans, on March 8, 1876. The Earl of Verulam was voted to the chair. Mr. R. A. Fitzgerald (for many years the popular hon. secretary of the Marylebone Club) set forward the basis on which the club should be established, and proposed the following resolutions, which were unanimously agreed to—

a. That the Herts County Cricket Club be now established.

b. That the Earl of Verulam be appointed president.

c. That Viscount Malden be appointed treasurer, and Mr. C. E. Keyser honorary secretary.

d. That the following form the acting committee: The president, treasurer and secretary, Earl of Clarendon, Hon. R. W. Grosvenor, A. Anderson and R. A. Fitzgerald, Western Division; Baron R. Dimsdale, Joseph Phillips, Percy Taylor and Rev. H. Wood, Eastern Division.

e. That there shall be no county ground or headquarters.

f. That no subscriptions be solicited, but that the expenses of the club be defrayed by voluntary donations (in no case to exceed £1).

g. That the qualification for the county be fixed according to the rules of the Marylebone Club, viz. birth or two years' continuous residence in the county.

The president, the Earl of Verulam, joined the Marylebone Club as far back as 1830. He played his first match at Lord's, July

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27, 28, 1825, participating on the side of Harrow against Winchester. He was noted as a hard hitter, especially on the leg side. He played at Lord's for the Gentlemen of England against the Players of England in 1836 and 1839. Three of his brothers, the Hon. E. H., Hon. F. S. and Hon. R. Grimston were likewise capital cricketers.

Mr. Robert Allan Fitzgerald was for many years honorary secretary of the M.C.C. He first appeared at Lord's on the side of Harrow v. Winchester, July 28, 29, 30, 1852. He was a very powerful hitter, and on one occasion at Lord's he hit a ball over the tennis court right out of the ground. He was exceedingly popular. He was the author of *Ferks in from Short Leg* and *Wickets in the West*, and went with the first English team to America.

In May, 1876, a keenly contested match between East Hertfordshire and West Hertfordshire was played at Hitchin, East Hertfordshire winning by the narrow margin of 1 wicket. For East Herts the veteran John Hughes bowled splendidly, while W. Hearn in the second innings of East Herts played a capital innings of 88. In the return fixture on Hartland Common in June of the same year there was again a most evenly contested match. Each innings of the two sides amounted to 160 and odd runs, the totals being West Herts, 1st innings, 166; 2nd innings, 166; East Herts, 1st innings, 165; 2nd innings, 161; West Herts proving victorious by 6 runs.

For West Herts T. Pearce played a not out 1st innings of 80, while on the side of East Herts the brothers Messrs. C. Pigg and H. Pigg were seen to advantage. A few facts anent three veteran Hertfordshire professionals may here be appended.

Edwin Goodyear was a noted local celebrity. He was born at Markyate Street, near Dunstable, October 18, 1836. He was a capital all round exponent, a good round arm bowler, bat and wicket keeper. In a match played on Boxmoor in August, 1871, between Hemel Hempstead and the St. Mary's Club he scored in his only innings 235 runs.

John Hughes, the famous Hertford 'old pipe maker,' was one of the pioneers of Herts cricket. He was born at Hertford in 1825. In the 'fifties' he was the best slow bowler in the county. Possibly one of his best bowling performances was in the United South of England v. Twenty-two of St. Albans, September 4, 1865. In the 2nd innings of the United South he actually, with the first three balls delivered, dismissed Tom Humphrey, E. Pooley and Harry Jupp. Hughes

was presented with a public testimonial at the Dunstable Arms, at Hertford, September 29, 1865, consisting of a silver watch and gold chain and a purse of sixty-three sovereigns. The watch bears the following inscription—

'Presented, with a purse of money raised by subscription, to John Hughes in recognition of his services in promoting the game of cricket in Herts, and as a mark of the subscribers' esteem, September 27, 1865.'

On June 7, 1890, a match was played for his benefit at Bishop Stortford, when an Eleven of England contended against Fourteen of Hertfordshire.

Thomas Albert Pearce was a cricketer of repute. He was born at Essendon in Herts, May 11, 1847. He played frequently for Herts in the 'sixties.' In 1874 in a local fixture between Hitchin and St. Albans he was credited with an innings of 200 not out, while in 1882 at St. Albans against a strong touring club he hit an innings of 215. A match was played for his benefit at Hertford, August 21, 1889, between Hertfordshire and Norfolk. In 1881 Pearce scored an innings of 101 for Herts v. Essex.

Frank Silcock in the 'sixties' too was a crack Hertfordshire player. He was born at Sawbridgeworth, October 2, 1838. Subsequently he became identified with Essex cricket. His cousin, Joseph Silcock, was also a capital player in local cricket, especially in the Stortford district. In 1865 the members of the Bishop Stortford Club presented him with a silver cup of the value of twenty guineas and a purse of twenty-five sovereigns.

The brothers Joseph and W. Westell also assisted Herts in matches of note in the early days, while another brother, W. T. Westell, for Herts v. Essex in 1883, played a grand innings of 188.

Subsequently V. A. Titchmarsh and W. Hearn did a great deal to improve Herts cricket.

V. A. Titchmarsh commenced cricket as an amateur, but in 1880 appeared as a professional. In the Hertfordshire v. Essex match at Hitchin, June 27, 1877, he obtained 15 wickets including all ten in the first innings. He accepted an engagement on the ground staff at Lord's in 1885, and in 1901 was one of the M.C.C. official umpires.

William Hearn of late years has been better known as a famous umpire. He was a native of Hertfordshire, and played his first match at Lord's for Herts v. M.C.C. in May, 1870. He was born at Essendon near Hatfield in 1849. In local matches he frequently scored heavily. For the county in

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1883 W. Hearn played a three-figure innings of 109 against Suffolk, and in 1887 contributed 105 *v.* Northamptonshire, and 167 *v.* M.C.C.

In 1877, Herts at Lord's on May 24, 25 played a capital match with the Marylebone Club, the visiting county winning by 25 runs; but in the return match at Royston Heath in June the same year the tables were turned, M.C.C. being victors by 98, chiefly owing to the fine trundling of Rylott and Mycroft, who took 12 wickets for 60 runs. Titchmarsh claimed 6 for only 16.

Mr. W. G. Grace took an eleven to Bishop Stortford in June of 1877, and tried conclusions against Herts, the home county suffering a severe defeat by 239 runs. Messrs. G. F. Grace, C. Pigg and W. R. Gilbert all reached the half century, and the last-named with the champion bowled unchanged. For the vanquished, John Hughes, aged fifty-two, took 7 wickets for 182, and W. Hearn made 47.

The match with Essex at Hitchin the same year was marked by the clever trundling of Titchmarsh, who captured the whole of the wickets in the 1st innings of Essex for 33 runs, and five in the 2nd for 44, Herts being victorious by an innings and 64 runs. At Brentwood too in July Essex were met and again defeated, this time by 9 wickets. Herts had 165 runs to get to win in the 2nd innings. T. Pearce was first in, and carried his bat for 87, the runs being actually hit off by Pearce and Hearn for the loss of only one wicket. Bedfordshire too suffered defeat at the hands of Herts twice this year, the Bedfordshire home match at Turvey Hove being won by 109 runs, while in the return played at Mr. W. Heathcote's seat, Shepalbury, near Stevenage, the victory was exactly 100 runs. Titchmarsh and the veteran Hughes bowled finely, the pair dismissing the visitors for 28 only in the 1st innings, Titchmarsh claiming 6 wickets for 14 runs, while 'Old John' secured 4 for 8.

The era of modern cricket dating from 1878, that date is convenient for a fresh estimate of the Hertfordshire side. The full team played nine matches, according to modern estimation of county fixtures. Victories were obtained over Suffolk (by 244 runs) and Essex in home engagements, and with M.C.C. at Lord's. The returns with the two counties were unfinished, and the premier club won a small scoring game at Royston. A draw with Bedfordshire at Hitchin was followed by a very keen contest at Luton, which ended in terrible defeat, Hertfordshire being set 39 runs to win and

being dismissed for 36. On first hands they had led by 108 runs, thanks to the batting of Mr. H. G. S. Hughes, who scored 99 out of 178 while in, and W. Hearn who made 75. Their second effort only lasted seventy minutes, T. C. Brown taking 5 wickets for 13 runs, catching the veteran J. Hughes off his own bowling at the close. An even draw with Somersetshire completed the programme, Mr. E. Sainsbury making 105 for the western county. The best recorded bowling for the county was *v.* Essex, when J. Hughes took 7 wickets for 9 runs, and in the season he captured 71 for 11 runs each. So little of a bat was he at the age of fifty-three, however, that in sixteen visits to the wicket his largest score was 6. Valentine Adolphus Titchmarsh, not yet a professional, took 53 wickets for 678 runs. Tom Pearce headed the batting with an average of 28 for 462 aggregate, and that good cricketer William Hearn trod close on his heels, besides fielding better than any one else on the side. By this time Edwin Goodyear had dropped out of the team and was coach at Elstree. Of the amateurs the best and most reliable were Messrs. Charles and Herbert Pigg, who for years were the mainstay of Hertfordshire cricket. Mr. Charles Pigg never obtained his colours at Cambridge, but he was a useful slow round-arm bowler and a hard-hitting bat. So far as first-class cricket was concerned after this date, his only appearances were for M.C.C. *v.* Cambridge University, and his aggregate in various years was 183 with an average of 16.3, whilst his three wickets cost 83 runs. Mr. Herbert Pigg had a more prominent career. He had played for Cambridge *v.* Oxford in 1877, though with no success. But in first-class cricket he subsequently scored 248 runs with an average of 20.8, his best innings being a fine 59 for South of England *v.* Australians at Hastings on September 17, 1886. On this occasion he took 8 wickets for 125, though severely punished by Messrs. J. M'Ilwraith and J. McCarthy Blackham. He had much to do with the formation of the Hastings Festival, and was chosen in the first Gentlemen *v.* Players ever contested in the district (September 16, 1899). On this occasion he had a large share in the remarkable victory by 1 wicket, for besides scoring 35 just when runs were badly wanted, he followed up his successful batting by some capital bowling, taking 7 wickets for 55 runs, though he derived some assistance from the state of the ground. His complete analysis from 1878 in first-class cricket was 28 wickets for 482 runs, averaging 17.6. He was a free firm-footed hitter and useful fast round-arm

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bowler. The wicket-keeping for Hertfordshire in 1878 was shared by Mr. G. Hanbury and Rev. W. H. Mackenzie, who, thanks to a valuable 76, came third in the batting averages. The fielding of Rev. H. T. Wood, when he could play, was remarkable. Several matches were played by the gentlemen of the county, but the only victory was over the Incogniti.

A much more successful season was that of 1879, when five victories, one draw and three defeats were chronicled. By far the most notable event was the double victory over Sussex. At Hitchin V. A. Titchmarsh captured 10 wickets for 45 runs in a match in which no one scored 30; but the home side were victors with 8 wickets to spare. At Brighton the same fast bowler claimed 13 for 60, a splendid performance. The highest score in the match which Hertfordshire claimed with a margin of 5 wickets was a capital 35 not out by the secretary, Mr. C. E. Keyser. Suffolk were disposed of for 27, John Hughes taking 4 for 13 and Mr. Herbert Pigg 5 for 13, after 4 for 16. Tom Pearce made 78 and took 4 opponents at the wicket. At Brentwood John Hughes sent back six batsmen for 22 runs, he being in his fifty-fourth year. As a rule the scoring for Hertfordshire ruled small in a wet year, 185 being by far the largest total. This was against Somersetshire, when Mr. H. Freeman hit hard for 61. Two matches were abandoned without a ball being bowled.

Less ambitious and much less notable was the tame card for 1880, only rendered remarkable by the performance of Mr. Charles Pigg at Hitchin on July 29, when he took all ten Northamptonshire wickets for 13 runs, the side being dismissed for 45. The solitary large aggregate for Hertfordshire was 320 v. Essex, and the largest individual contribution was 89 not out by Pearce. Next season double victories over Essex had to be set against four defeats; but they had bad luck owing to rain at Lord's. Mr. I. D. Walker made 137 and Mr. T. C. O'Brien (then known merely as a big hitter for Kensington Park Club) scored 89 out of 115 whilst in. In the home match for M.C.C., Mycroft taking 5 for 11 and Barnes 4 for 11, Hertfordshire were dismissed for 28. Pearce scored 101 v. Essex, the only contribution over 60 during the season, whilst the best bowling analysis was that of Mr. H. L. Butler, 7 for 28. A double victory over Bedfordshire and the discomfiture of a weak M.C.C. side at Hitchin by 145 runs were the best features of 1882. Titchmarsh took 56 wickets for less than 10 runs each; but

the batting was moderate and the side rarely identical. The scratch teams had a deplorable effect on the fielding.

A solitary victory by 7 wickets over Suffolk in 1883 had to be set against seven defeats, four being with an innings to spare. Hearn scored 109 in the only drawn game, the return with Suffolk. Brendon proved a useful medium-paced bowler; but as may be imagined the standard was low. The effort to oppose Surrey proved too ambitious, though Pearce hit ten fours in his 58. Barratt claimed 13 wickets for 139, and Maurice Read made 97 out of 135 in an hour and a half without a chance.

With a more restricted programme in 1884 the only success was against M.C.C. by 10 wickets. Westell however with an average of 43 improved on the batting figures for previous seasons. He scored 188 v. Essex, and Hearn was credited with 132 against the same county. Curiously enough an identical result was recorded for 1885, the only victory being over M.C.C. at Lords. The margin was an innings and 75 runs. Mr. Herbert Pigg scored 141 and Mr. Charles Pigg 74, adding 156 for the fourth wicket. The collapse of Bedfordshire as a county had released Mr. H. G. Tylecote, a capital slow bowler, who was four seasons in the Oxford eleven, from 1874 to 1877, in which year v. Cambridge he took 10 wickets for 12 runs apiece. He signalized his appearance for his new county by taking 7 M.C.C. wickets for 42 runs. The two Harrovians, Messrs. H. E. and Eustace Crawley, also came into the team. The latter was one of the most determined 'stone-wallers' ever seen. After getting 35 and 103 not out for Cambridge v. Oxford in 1887, he batted for an hour before he was bowled, without having scored, in the four-day match of 1888, and in the second innings was an hour before he made one, after which he was promptly bowled. In the year now under consideration—1885—he had scored 100 for Harrow v. Eton. He subsequently entered the 9th Lancers. His elder brother scored 103 for Hertfordshire v. M.C.C. Poor fielding mitigated even the moderate success of the bowling. Yet again in 1886 out of six matches for the third year in succession the one triumph was over M.C.C. at Lord's, Pearce atoning for a long course of ill-luck by a capital 58. Mr. Herbert Pigg could only spare time to play against Hants, when he proved the value of his batting with a fine 133. Some steady bowling by Mr. Charles Pigg was the only other feature worth recording. For Hampshire Mr. F. E. Lacey

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made 185 in the first and 131 in the return with Hertfordshire, whilst Dible made 114 and Mr. E. O. Powell 111 for the same county against the shire under consideration. These were the only centuries made that season by the southern county.

Improvement came in 1887, as the annual victory over M.C.C. at Lord's was supported by a double discomfiture of Northants and a 7 wickets success over Staffordshire. These had to be set against three defeats. Pearce, Hearn and Rev. C. M. Sharpe, who had been in the Cambridge eleven of 1875, were the century-mongers, and Mr. A. Butcher proved a steady bat.

1888 was marked by a brace of successful contests with Northants set against five defeats. Only once was the second hundred passed (in the draw with Staffordshire), but the team was only twice out under three figures. Mr. Charles Pigg took 42 wickets for a dozen runs apiece.

The form of the county was not maintained in 1889, for one defeat (by Surrey 2nd Eleven) had no compensating game to the credit side, the remaining seven fixtures being drawn. The Wykhamist, Mr. A. J. Boger, came into the team and was useful with the ball, in which department the brothers Pigg and Titchmarsh had to do the chief part of the destruction. Titchmarsh also scored the highest innings, a hard-hit 90, Rev. W. H. Heale making 85, the largest he ever contributed for the county. Whilst playing occasionally during a number of years, Hertfordshire were not good enough to play among the second-class counties in 1890, their nine fixtures being with Norfolk, Northants, Northumberland, Durham, M.C.C. and Surrey 2nd, which alone defeated them, whilst two victories were noted. Rev. E. D. Shaw, taught to play at Forest School, who had been in the Oxford eleven of 1882, scored 140 at Norwich, otherwise the useful analysis of Mr. Charles Pigg was the only feature above mediocrity.

In 1891 for the first time Hertfordshire defeated Surrey 2nd by 72 runs. This solitary success had to be confronted by defeats at the hands of Lincolnshire, Devonshire, Norfolk and M.C.C., whilst five fixtures were drawn. Thirty cricketers played more than one match for the county. Mr. G. W. Hillyard, the crack lawn-tennis player, who was afterwards so effective as a fast bowler for Leicestershire and who had been tried years before for Middlesex, whilst still in the navy, appeared for Hertfordshire and took 24 wickets for 15 runs each. No one made a century, though Hearn came

within two of the coveted figures. Titchmarsh was by far the best all-round man on the side.

The fixtures were even less extensive in 1892. Mr. T. N. Perkins scored 102 on his solitary appearance, and Mr. Herbert Pigg 91. Mr. Charles Pigg, the honorary secretary, was only moderately successful, and the brunt of both departments fell on Titchmarsh.

For 1894 no figures were contributed to the annuals upon the game, but victories were gained over Lincolnshire, Bedfordshire and Norfolk, Mr. E. L. Swift scoring a century in each innings of the victory over Bedfordshire. By deed of gift the county cricket and recreation ground in Clarence Park, St. Albans, with its accessories and adjuncts, was conveyed to the Corporation of St. Albans on July 23, 1894, and at a special meeting on March 19, 1895, the club formally recognized it as the Herts county ground. The offer of such a ground had first been made to the county cricket club by Sir J. Blundell Maple during the season of 1891. At the general meeting held on December 4 of that year a long discussion on the subject took place, but no decision was arrived at, although a sub-committee was appointed to inquire into the matter. Nothing further is on the books of the county club in reference to it until a letter was read on November 3, 1892, from Sir J. Blundell Maple, wherein he offered a cricket and recreation ground to St. Albans, to be used as a county ground under certain conditions. At the general meeting held that day details of this scheme as affecting the county club were left to a fresh sub-committee, with the result already mentioned.

The year 1894 saw victories over Norfolk and Bedfordshire (twice) set against a defeat by the invincible Surrey 2nd Eleven, who did not lose a match that year, and a quartet of unfinished contests. Titchmarsh bowled in excellent fashion. Mr. H. J. Hill came out with the best batting average and made the longest score of the year (95). The Carthusian wicket-keeper, Mr. G. E. B. Pritchett, shaped well, whilst the fielding of Mr. J. O. Anderson was fine. Mr. C. Pigg at this time acted as both captain and secretary.

Next year things were worse. Only Staffordshire was lower in the Minor Counties' Competition; but a touch of pride was felt at Norfolk and Worcestershire both being soundly beaten, they being the top counties encountered. White did a lot of hard work with both bat and ball, his medium-paced deliveries effecting some havoc. That old Cantab, the Rev. F. W. Poland, had luck in

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topping the averages. Yet he was the only one averaging over 20.

Consistently good batting put a better complexion on 1896, so that the county tied with Northamptonshire and Northumberland for third place. Mr. H. Pigg came out head of the averages, in which five batsmen exceeded 20. The brunt of the bowling fell as before on White and Titchmarsh, though Mr. J. Wood proved a useful change. That fine field and steady bat, as well as most respectable man, William Hearn, now retired in his forty-sixth year.

Disasters came in battalions in 1897, for after easily beating Norfolk they lost eight of the remaining eleven fixtures and had no further success. Thirty-three players were seen on the hapless side. Messrs. C. Pigg and A. Butcher did good service with the bat; but the bowling was deplorable, and the totals hit off it included scores of 493, 459, 403, 397, 396 and 391. Mr. H. H. Cobb, who subsequently played for Middlesex, batted some half-dozen times.

As the result of a private meeting convened on November 6, 1897, by Sir J. Blundell Maple, to which he invited the four county members of Parliament, the Lord Lieutenant, the president of the County Council and a few cricket officials, a general meeting was called for the 22nd of the same month, and steps were at once taken to reorganize the club and put it on a sound basis. A fresh committee was elected, new rules framed, and a guarantee fund started with a view of raising a subscription list of at least £500 a year. Lord Clarendon was elected president, and Captain the Hon. W. Grimston, R.N., became secretary, the duties of that office being subsequently shared by Dr. Earle Norman, who on November 27, 1899, became sole secretary, a position in which he is doing admirable service. The St. Albans Town Council in 1898 handed over the entire management of the county ground to the club, who thus became virtually the tenants, and pay a stated annual rent for the property.

The fresh efforts had little practical result on the fortune of the side, for not a game was won in 1898, whilst of the seven defeats, all substantial, five were with an innings to spare. On six occasions their opponents exceeded the third hundred, and the bowling figures form sad reading. The batting showed a marked advance, with Mr. Herbert Pigg again at the top. Both he and Golding made centuries, whilst a useful recruit was found in Mr. T. H. K. Dashwood, the old Wellingtonian. The famous Carthusian footballer, Mr. G. O. Smith, himself the hero of one of

the finest innings ever played in the University match—132 in 1896—appeared in one fixture scoring 89.

Though not satisfactory, matters so far improved in 1899 that Cambridgeshire were defeated by 6 wickets, whilst four defeats were registered. Again the weakness in bowling was sadly apparent, such scores as 486, 434, 370, 361 and 280 being chronicled against them. At Lakenham v. Norfolk Mr. T. H. K. Dashwood scored a brilliant 151, the largest innings made for the county, and the three professionals, White, Golding and Field, all played with consistent steadiness. The Harrow fast bowler, Mr. E. G. McCorkendale, was of some service; but Mr. D. J. Cassavetti alone of the rest merits mention.

Finally, in 1900, Hertfordshire again went through a season without winning a match, though ten men averaged over 20 with the bat. All the amateurs were comparatively unknown; but Messrs. J. H. Hicking and R. C. Grellet ought to be of future use. The former learnt his cricket at Tettenhall College and the latter at Bedford School. Golding scored 170, the largest innings ever made for the county, and obtained his runs by free fearless play. This was against Norfolk on July 17, when Mr. J. H. Hichin also notched 124. Again the lack of 'sting' lay in the bowling, for though Coleman and White had fair figures, all the changes were impotent, whilst the fielding was loose.

In concluding the most exhaustive survey of Hertfordshire county cricket ever compiled, it cannot be summed up as encouraging or remarkable. Taking the very best names right down the five-and-twenty years a fair side might be collected; but as no regular team has ever been placed in the field, consequently no coalition between the members was ever discernible. Whilst the batting was generally steady, apart from a few individuals the lack of energetic hitting was painfully apparent, and the county has materially suffered from never having retained a reliable wicket-keeper possessing much experience. The bowling has invariably lacked variety to such an extent that the principal trundlers were never afforded sufficient respite to do themselves justice, whilst Titchmarsh did not fulfil the early hopes entertained of him, for his attack seemed to lose 'devil' when he was on a sound wicket. On the other hand the county cricket has enjoyed no measure of popular support, for even in 1900, when there were 400 subscribing members, the receipts from the gate-money for the whole season were less than £19. If the contention of Mr. J. P. Kingston is true that

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Northamptonshire would long ago have attained first-class honours had the county possessed a town with nearly a quarter of a million of inhabitants, how much more enthusiastic would have been the character of Hertfordshire cricket had a thousand spectators ever watched a single match?

In 1881 a suggestion was made that a challenge cup be provided, to be annually competed for by various clubs in the county. The subject was at various times brought up, but not very favourably received, although in 1882 the Rev. F. W. Gall 'offered to present a cup to be competed for temporarily, until a handsomer one should be provided.' Nothing further appears on the club minutes in connection with the matter until February 23, 1885, when the draw for the challenge cup took place, eight clubs having entered for it. In the minutes for the general meeting for December 7, 1885, is the following: 'It appearing that the institution of the county challenge cup was somewhat informal, it was resolved that the county club should take over the same into its own hands.' Though there is difficulty in tracing any cup-ties in 1885, the trophy went to Potter's Bar, whilst in the following year Watford proved victorious. In the minutes of the general meeting held on December 6, 1886, it is stated that 'considerable dissatisfaction has been expressed with regard to the umpiring in the cup-tie matches.' The competition was continued in 1887, for it is stated that the honorary secretary, Mr. Charles Pigg, was authorized to pay a certain sum to the umpire in the Redbourne v. Watford cup-tie match, when the prize belonged to Hemel Hempstead. The cup was won by Redbourne in 1888, 1889 and 1890, when it became their absolute property. The competition has never since been revived.

For many years Mr. Charles Edward Keyser, of Derry Hill House, Bushey, was honorary secretary to the county club. He was an old Etonian who graduated at Cambridge. In 1884 he was succeeded by Mr. H. Freeman, who resigned in favour of Captain Beresford Baker, who in turn vacated the post, which was then filled by Mr. Charles Pigg.

One of the pleasantest memories of Hertfordshire cricket were the charming matches at the Node, Welwyn, where during the season strong wandering clubs are met. In 1871 a most exciting contest was played against the Incogniti. The match was played on July 27, the 'Incogs' scoring 171. The match seemed a certain win for the visitors, but on Mr. C. F. Reid, the last bats-

man on the side of Node, joining Mr. H. E. Baker, the bowling of the Incogs was fairly collared, scant respect being paid to the trundling of Messrs. C. J. Brune, G. Law and P. V. Turner, the two Node batsmen winning a splendid contest for the home side by 27 runs for the loss of but 9 wickets, Mr. C. F. Reid carrying out his bat for a sterling 64, while his *vis-à-vis*, Mr. H. E. Baker, was undefeated at 21. Mr. C. F. Reid is father-in-law to the well-known Oxford University and Middlesex amateur, Mr. E. A. Nepean. Mr. C. F. Reid was an ardent member of the Free Foresters. In the *Annals of the Free Foresters*, published in 1895, appear several amusing annotations from the pen of Mr. Cecil Reid.

With reference to club and village cricket within the county in recent years, Dr. Earle Norman, after much inquiry, found that the particulars he could elicit were so meagre and at the same time so spasmodic and unreliable that no regular account could be compiled, few scores being preserved, and in those omissions being more conspicuous than available information.

HAILEYBURY CRICKET

Haileybury College was founded in 1862 and incorporated in 1864. During the first years of the school's existence no match was played against another school, and it was not until 1866 that a fixture was first arranged against Wellington College. From that time to 1900 the match has been played regularly, and the record stands: Matches played, 31; won 7, lost 18, drawn 6. The last three consecutive games have been won, the last in 1900 being one of the most interesting of the series. On going in to bat the second time Haileybury were left 330 runs to get in three hours and a half; these were knocked off for the loss of 4 wickets in two hours and a quarter, E. C. Smith and E. C. Hodges both scoring over 100. The only other century scored against Wellington seems to have been C. Gurdon's 152 in 1872, when Haileybury won by an innings and over 300 runs.

In 1868 an additional school match was arranged against Uppingham. In this fixture, which became an annual one, the School has had very few successes, the wins standing at 3 as against 14 losses, while 3 have been drawn. In the last two years good games have resulted, but fast wickets have made the scoring too high for a definite conclusion to be arrived at.

Since 1893 a third match has been played at Lord's against Cheltenham. For the first

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four years the scores were remarkably close, Cheltenham winning in 1894 by the narrow margin of 1 run, a result perhaps due to a mistake at the finish by the scorer. The last four matches in succession have been won, and the record for the series stands at present—played 8, won 4, lost 1, drawn 3.

Besides the regular fixtures the School played Rossall at the Oval in 1874 and won, while Haverford College, U.S.A., have paid visits in 1896 and 1900, the matches resulting in draws on each occasion.

The colours are white flannel blazer edged with magenta, white caps with magenta peak and stripes of the same hue.

METHOD OF TEACHING AND ORGANIZATION OF GAMES

The organization of the cricket at Haileybury depends almost entirely on the house system. The games fall into the two general divisions of big and little sides, big side consisting of the 1st and 2nd elevens only who play and are coached separately, while little side comprises all the rest. Each house supplies three elevens, excluding those on big side, and these elevens compete against one another on the league system for a 'little side cup,' marks being given for wins and drawn games for each separate eleven, though 1st elevens naturally count more than the others. In addition to these games one day in every week is set aside for the playing of house matches, properly so called, that is, matches in which the best eleven in the house, big side included, plays. For this another cup is offered, and owing to lack of time the houses are drawn against one another and gradually weeded out instead of playing on the league system. With the exception of these house matches big side play separately, the games being either eleven practices or pick-up games.

One great advantage of this system seems to be the interest given to the games played throughout the term. There is always something to be played for, and this makes a great difference towards the end of a term. On the other hand it has the disadvantage of making small boys sometimes play with others too big for them, and this does not always improve the cricket.

METHOD OF COACHING

Three nets are set aside for practice for big side exclusively. Two of these are generally taken in hand by masters and the third by a professional. With the aid of these each boy gets from three to four half-

hours of coaching every week privately in addition to the big side games played. A second professional is engaged exclusively for smaller boys, generally under fifteen. Under his supervision the most promising of these are given practice times at the nets, and take part once a week in what are called 'colts' games.' These generally take place on Saturday afternoons, so as not to prevent their playing in the ordinary house games, which do not go on during a foreign match. Colts' teams play in addition two matches during the term against similar sides of Dulwich and St. Paul's School. The remainder of the coaching is done, generally in the evening, by big side boys at the little side nets, one of which is reserved for each house.

EMINENT CRICKETERS PRODUCED

Comparatively few have attained to first-class honours in the game, possibly owing to the large number who enter the service. Only four have played in the University match, two for each side. Mr. Vere Kemball Shaw was in the Cambridge Eleven of 1876, and subsequently appeared for Kent in several seasons, being a fairly good bat and a fast left-handed bowler. In 1877 and 1879 Mr. F. G. G. Jellicoe proved useful as a slow left round-arm bowler for Oxford, his best figures being 8 for 36 *v.* Gentlemen of England. He was a remarkably crude bat, and subsequently was at times found in the Hampshire side. Mr. W. D. Hamilton was the most notable of three Irish brothers, who have done good service for the game in the sister isle. He was a free left-handed hitter, who obtained his colours for Oxford in 1882 for capital scores against the Gentlemen of England, when he punished Mr. Hugh Rotherham's fast bowling with severity. He was also a fine field, especially at long leg. Mr. A. H. C. Fergus in 1900 was a member of the Cambridge Eleven in consequence of his effective bowling for Gloucestershire *v.* Middlesex at Lord's (12 for 87). He also played for Gentlemen *v.* Players at Scarborough.

Colonel James Spens, who was in the eleven in 1868, 1869 and 1870, proved a powerful hitter. In 1882 at Portsmouth for the United Services *v.* Nondescripts he scored 386, and he at times assisted Hampshire, making 74 and 71 *v.* Somersetshire in June, 1899. The late Captain R. P. Spurway, a capital bat and hard-working field, was frequently found in the Somersetshire team. Others who may be mentioned are Messrs. E. Malden, K. McAlpine and L. L. H.

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D'Aeth, who have been tried for Kent, and Mr. J. F. Bawtree, a useful cricketer, more than once seen in the ranks of Essex. To complete the list must be added the names

of Messrs. E. B. Raikes (Norfolk), H. W. Pank (Hertfordshire), C. Gurdon, who took to rowing at Cambridge; C. B. Smith and W. S. Gurney (Norfolk).

FOOTBALL

ASSOCIATION

The first record of Hertfordshire football appears to be an engraving, entitled 'Football at Barnet,' in which three or four youths are shown kicking a ball about a street or marketplace. The date is about 1770, and the only known copy is in Mr. Lewis Evans's *Herts Collection of Prints*, vol. i., now in the County Museum at St. Albans.

As first played at most of the Hertfordshire schools football was a mixture of the Harrow and Rugby rules. Upon the introduction of the Association game these new rules were generally adopted, and then the history of Association football in Herts really commenced.

The schools of Berkhamstead, Bishop Stortford, Hitchin, St. Albans, Harpenden, Elstree and Aldenham frequently turned out good players. F. E. Brunner of Berkhamstead was chosen for Cambridge *v.* Oxford, but unfortunately broke his leg before the match, and so was unable to play. C. P. Wilson, F. G. J. Ford, W. N. Roe, P. H. Morton and A. T. B. Dunn have all been included amongst the Elstree masters. The following record of Aldenham School football is kindly supplied by Mr. P. J. Rust, the editor of *The Aldenhamian*. 'It is not certain when the school first played football, but the first person in the school register who is described as a member of the football eleven is B. G. Wilkinson, who was at the school from 1866-75. E. O. Roper, who was at Aldenham from 1874-9, played for Ireland in International matches. J. Barnard represented London *v.* Sheffield at Kennington Oval in 1884. In 1886 he played for Hertfordshire against Huntingdonshire, and also several times for Cambridge University. N. Logan in 1884 played for Middlesex against Essex; P. O. Ashby several times for Oxford in 1886. E. R. Ross in the same year distinguished himself for Upton Park. E. E. Villiers in 1887 also represented Upton Park against the Casuals in the penultimate round of the London Cup. E. J. W. Disbrowe won his blue for Cambridge in 1889 and 1890, as did J. R. Paull in 1890 and R. A. Low in 1894. S. S. Taylor won his blue for

Cambridge in 1896, and was captain of the team in 1897-8. R. G. Wright also was one of the Cambridge University eleven in both 1900 and 1901. In 1897-8 Aldenham beat Ware by 6-0 for the Hertfordshire Cup, and getting into the final were defeated by Hitchin 2-1 after a drawn game.' Ludgrove, a new school at Barnet, under the head-mastership of A. T. B. Dunn, the International player, numbers at the present time among its masters two other International players: W. J. Oakley and G. O. Smith.

In the sixties football was being taken up by teams outside the public schools.

In 1862 Mr. T. F. Pratt Barlow, an old Harrovian, started a football club under Harrow rules, which played in a field near Apsley Mill Two Waters, Hemel Hempstead, and had a life of two seasons. In 1872 this club was restarted by Mr. Lewis Evans, at first with Harrow rules. It took to the Association code in 1873, but again only lasted about three seasons. In 1873 or 1874 Mr. Evans formed a club at Kings Langley and one at Abbots Langley in the following year. At this time there was a club at Tring, and one was started at Boxmoor.

The Hertfordshire Rangers were formed in 1866, playing under Association rules. They were compelled to take fresh fields on three occasions, and all these grounds, which were in the vicinity of Watford Station, are now covered with houses. The club was chiefly composed of public school and Cambridge University men, Cambridge not having a regular team at the time. It was well supported by Elstree and Aldenham Schools. Owing to the original members gradually giving up the pastime and the withdrawal of the University contingent a scarcity of players came about, and after holding its own for sixteen seasons against the best clubs in the south of England the club was dissolved in 1883. One of the best of its records is a victory over Cambridge University by one goal to none. Mr. Robert Barker of Rickmansworth, an English International, was the captain and leading spirit of the club, and Messrs. Chas. Humbert of Watford, S. Taprell Holland of Otterspool, Lewis Evans of

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Nash Mills, the Rev. J. Kennedy and J. Barnard of Aldenham School, H. Chance of Oxford University, F. W. Hotham, W. N. Roe and C. P. Wilson of Elstree School, and F. J. Sparks, a very brilliant centre forward, were among the chief players. Of these, F. J. Sparks and C. P. Wilson both obtained International honours. One of the most important matches the Rangers played in its later days was an English Cup tie, which took place in 1881 at Kennington Oval against the Old Etonians, who eventually won the cup. The Rangers turned up with ten men and were not very badly beaten. It was in the last years of the club that Mr. F. A. Sargent, afterwards the best centre forward in the county, came out as a prominent player.

In 1874 a local club called 'Clarendon' was formed and lasted until 1888, when it was converted into 'Langley United.'

The Association game in the meantime had been extending in Watford and St. Albans. The cathedral town had got together a good team by the aid of Messrs. Fred. A. and W. A. Sargent of Watford and other county men. A club was founded by Mr. H. W. Grover in 1881 called Watford Rovers, which soon became the representative club of West Herts. It took part in the competition for the Football Association Cup in 1887, 1888 and 1889, but its best record was in the County Cup competition. They were the runners up for the County Cup to the winners Hoddesdon F.C. in 1887, 1888 and 1890, and winners in 1889, 1891, 1892, as well for the fourth and fifth time as West Herts in 1894 and 1897. Many well known players were members from time to time: W. N. Roe (Elstree School), P. H. Morton (Elstree and Cambridge), J. A. Brown (Notts County), J. R. Paull (Aldenham and Cambridge), A. M. Low (Aldenham and Cambridge), A. T. B. Dunn (Old Etonians), Rev. J. Kennedy (late headmaster Aldenham School), and E. H. Mariette (Aldenham School). Other prominent players were Messrs. F. A. Sargent, W. Alec Sargent, Chas. H. Peacock, Geo. Waterman, E. E. Villiers, G. D. Morrison, Walter S. Coles, P. Coles and J. Woods. The club was merged into the West Herts Club and Ground in 1892. It is now under the title of Watford F.C., the only professional club in the county. It won the second division of the Southern League in 1899-1900, and was also successful in heading both divisions of the Bucks and Contiguous Counties League. Last year it joined the first division of the Southern League, and although occupying a low position in the League table

at the end of the season, managed to beat Tottenham Hotspur, who eventually won the Association Cup. They also defeated Reading, and lost both games with Southampton by the small margin of one goal.

The Nascot F.C. was started in 1880, and only lasted three seasons. The principal matches won were against Herts Rangers, Watford Rovers and St. Albans.

A Watford club called St. Mary's was very successful for some years, bringing out a number of excellent young players, who afterwards joined the West Herts Club.

Another club called Watford St. Mary's was afterwards formed, and after beating the West Herts club in the County Cup Competition was defeated by Hitchin in the final tie in 1895. The club afterwards amalgamated with the West Herts Club.

Other Watford clubs prominent for a time were the Grove and Watford Wanderers. Both of these came to an end, owing to their best players joining the West Herts Club.

The Old Hitchin Club played their first game in 1865, and joined the Football Association in 1867 with about sixteen other clubs. They used to play in the 'Dog Kennel Field.' Mr. F. Shillitoe was captain, and led teams against the Old Etonians, Old Harrovians and Wanderers, for which latter club the following among others played: C. W. Alcock, Cecil Reid, C. I. Thornton, the Hon. A. F. Kinnaid (now Lord Kinnaid, President of the F.A.) and Lord E. Fitzmaurice. Some of the Old Hitchin players still to the fore in athletics are Messrs. W. Tindall Lucas, L. Thompson, W. Hill, W. O. Atkinson, F. Farmer. Mr. Wm. Lucas played in the first club match, and still takes a keen interest in the game. The Hitchin Club has been very successful in late years in the County Cup Competition, having won the cup four times since 1894.

The Hoddesdon Club was formed in 1879 on the same lines as the Herts Rangers, of old public school boys and University men. It turned out several blues, including H. C. Newbery, who played in 1887 and 1888, L. L. Cox, who played in 1889. They both represented Cambridge, and were also members of the Corinthian Club. F. B. Debenham played for Oxford several times, but never against Cambridge. Other prominent players were G. R. Newbery, captain from 1885 to 1890, and H. Salway. The club played a very fine team for many years. From 1887 to 1890 the club were in the final for the Hertfordshire Cup, winning it in 1887, 1888 and 1890, and losing to the Watford Rovers in 1889. During these four years

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79 matches were played, 53 won and 9 lost. Its place in the east division is now taken by the Cheshunt Club, which was formed by many of the old Hoddesdon players. Since its formation in 1889 this club has been the means of obtaining a large sum of money for charities. A rather interesting fact is that F. Holford has played for the club during the whole eleven seasons of its existence.

St. Albans has played good football from the earliest days, the club always being one of the strongest in the county. Professionalism was adopted and met with much success for a short time, but financial troubles ensued and the paid player was abandoned. The Town Club is now called St. Albans Amateurs. In 1900-1, its first season, it was most successful, winning the County Cup, the County League, Mid Herts League and the Bingham Cox Cup. Some of the best known St. Albans men were S. F. P. Moore, the finest dribbler in the county, the Rev. S. M. Stanley, J. W. Sharpe, E. N. Sharpe, J. W. Dickerson and C. Miskin.

The County Association was formed in 1886, Boxmoor United, Hoddesdon, Bishop Stortford, Wheathampstead, Hitchin, Watford Rovers, Aldenham School, Silesia College, Hertford, Hemel Hempstead and St. Albans forming the members for the first season. Mr. R. Cook of St. Albans and Mr. W. A. Sargent of Watford were the first joint hon. secs. The County Cup was first won by Hoddesdon. The following is a complete list of the winners: 1886-7, Hoddesdon; 1887-8, Hoddesdon; 1888-9, Watford Rovers; 1889-90, Hoddesdon; 1890-1, Watford Rovers; 1891-2, Watford Rovers; 1892-3, St. Albans; 1893-4, West Herts; 1894-5, Hitchin; 1895-6, Hitchin; 1896-7, West Herts; 1897-8, Hitchin; 1898-9, Ware; 1899-1900, Hitchin; 1900-1, St. Albans Amateurs.

In recent years the Association, which now affiliates upwards of eighty clubs, has instituted and carried out competitions for a County League, Junior Cup and lastly a Charity Cup.

St. Mary's Cup Competition was started in 1889. Open to all players in West Herts except the eleven members of the Watford Rovers, who won the County Cup, it has excited keen competition. It was first won by the Watford Grove, and presented to the winners on the Watford Recreation Ground by the Earl of Clarendon.

In 1891 a great impetus was given to football in the district by the formation of the West Herts Association and the West Herts League. This League was the first

to be formed in the south of England. The Association took over the management of the St. Mary's Cup Competition and organized a band of excellent local referees, whose reputations and services extended to the neighbouring divisions. Teams were entered for the County Cup by this Association in 1892-3 and 1893-4, the Association each time running into the final round.

The St. Mary's Cup Competition, West Herts Association and League Competition were initiated by Mr. A. J. Millar, who was hon. sec. from 1891 to 1899, when he resigned on his election as hon. sec. of the County Association.

District associations were afterwards formed in the remaining parliamentary divisions of the county, with a League Competition in each. A large amount of interest has been aroused in Mid Herts by the competition for a cup presented by Mr. Bingham Cox.

From 1886 the Apsley Club has won many trophies, including the County League, West Herts League, St. Mary's Cup, County Junior Cup and the local Charity Cup. The Charity Festival promoted by this club has handed £200 to local charities during the last few seasons.

Other prominent clubs are Berkhamstead, Hemel Hempstead, Rickmansworth, Hertford, Ware, Stevenage Town, Hitchin Blue Cross Brigade, St. Albans Stanville.

The Watford and District Elementary Schools Football Association was formed in 1899 and instituted a League Competition which has been won by Callow Land School, Watford, in 1899-1900 and 1900-1. This school was also successful in winning the cup presented in 1900 by Mr. E. N. Wix, H.M. Inspector, for competition by the elementary schools of Bedfordshire, Hertfordshire and Huntingdonshire.

RUGBY

Hertfordshire being easily accessible from London and possessing such a famous nursery of the game as it does at Haileybury College in the ordinary course of events ought to have taken a prominent position as a Rugby playing county. But if we except Haileybury, the carrying game has never gained a firm footing in any part of Hertfordshire. From time to time Rugby clubs have existed in different districts, but only to go over, the majority of them, to the Association code with its additional attractions of cups and leagues. In a record of Rugby Union football in Hertfordshire Haileybury claims precedence, first because the game was there introduced into the county, and

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secondly on account of the important part played by the *alumni* of the Hertfordshire School in the history and development of the game. The college was opened in 1862 and A. Butler the first headmaster, who came from Rugby, brought with him and introduced into Hertfordshire the rules of that school. The Haileybury boys at once took kindly to football, and with the example of several masters who participated in the practice games, notably E. P. Ash and the late H. St. J. Reade, a creditable team was soon placed in the field.

In the 'sixties' twenty players formed a side at Haileybury, and this number was not reduced to fifteen until 1877, the arrangement of the men in the field being three full-backs with two or sometimes three half-backs. To encourage efficiency in kicking, prizes were awarded for both dropping and placing. In addition to the regular inter-house matches and school games about five foreign matches were usually played—Guy's Hospital, Old Marlburians, Old Haileyburians and a team or two from Cambridge University being among the earliest opponents met. Some of the prominent players of the sixteen were E. C. Cheston, captain in 1867, and his brother Horace, both of whom were afterwards conspicuous members of the Richmond club; H. Bourdillon, of whom more anon; F. S. Wrench, a fine half-back; W. A. Frith and G. V. Oddie.

That the standard of play at Haileybury soon became a high one may be gathered from the fact that of the team of 1869 four—Bourdillon, Champneys, Batten and Merivale—afterwards played for their respective Universities—Batten by the way captained the first Cambridge University twenty—while another member of the same team, L. Birkett, represented England against Scotland. This same season the college were only defeated in one match, that against the powerful Richmond club. In the following year, under the captaincy of H. Bourdillon, Haileybury had again a very strong combination, and its success was largely contributed to by the excellent dropping and placing of J. (now Colonel) Spens so well known later as a racquet and cricket player. By his instrumentality Colvin's house carried off this year the Inter-house championship. Of the foreign clubs met, Richmond, Guy's Hospital and the Old Boys were defeated, and only the match against the Marlborough Nomads resulted in a reverse. It is interesting to note that the latter match has been regularly played from 1867 to the present time.

In 1872 H. Bourdillon filled the position of captain for the third season and completed his fifth year in the team. During his last year as captain the college suffered no defeat, an achievement which stamps the Haileybury football training as being most thorough. On going up to Oxford Bourdillon so favourably impressed the football authorities there that he was chosen for three years against Cambridge. In addition to the captain the team of 1872 contained several other players who afterwards became famous in the football world, notably the brothers E. T. and C. Gurdon, two of the best forwards who ever represented England. E. T. Gurdon played four years in the Cambridge team and sixteen times for England, a record not equalled by any other Englishman. For many years he captained both the Richmond and English fifteens and has long been a leading legislator on the Rugby Union Committee, of which body he is a past president. Charles Gurdon, who captained Haileybury in succession to Bourdillon, was a heavier forward than his elder brother. Like him he represented Cambridge, Richmond and England, while as an oarsman he had few equals. A contemporary of the Gurdons in the Haileybury team was the present headmaster of Malvern, the Rev. S. R. James, who captained the light blue fifteen in 1877. As a matter of history it may be mentioned that no less than eight of Bourdillon's last team gained their blues at one or other University.

In C. Gurdon's year of captaincy, 1873, the college again did extremely well, only suffering one defeat, and that from Richmond on the latter's ground. C. C. Atkinson, who afterwards played for Oxford, succeeded Gurdon, and his team defeated the famous Ravenscourt Park club and drew with the Marlborough Nomads. Though matches against other schools did not form a regular part of the college programme until some years later, this season was notable for the fact that the college for the first time tried their strength against another public school. St. Paul's were met on November 14, 1874, and easily defeated by a goal and three tries to nothing. In 1877, in conformity with the reduction made by the Rugby Union in the number of players in their international matches, Haileybury also reduced their twenty to fifteen. This season however the college did not maintain their good record, as out of six foreign matches they were only successful in one. Next year, under A. L. Foster, the team did better, and much of their success was due to J. B. Shackle, who scored nine

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tries in seven matches. The season of 1879 was fairly successful, though most of the team were new choices. It included F. Gurdon, a younger brother of E. T. and C. Gurdon, who, though he never attained to the same prominence as his brothers, was always an honest and reliable forward. Another useful player of the same year was F. W. Welldon, a brother of the Bishop of Calcutta, and now a master at Uppingham.

During the 'eighties' the school match list generally included several visits from Cambridge college teams, in which the boys usually proved the victors. Among notable players who reflected great credit on their Hertfordshire training at this period were the brothers Le Fanu. One of them, V. C., figured conspicuously for three years in the Cambridge fifteen and also for a time assisted county football in Kent. He also appeared in many international matches for Ireland, and was one of the best forwards who have ever worn the green jersey of the Emerald Isle. Another, A. Trethewy, captained the school for two seasons, and was subsequently a prominent pushing forward in the Cambridge pack. O. G. Mackie captained the Cambridge fifteen in 1896 and in addition to playing for England was included in the second Rugby team which visited South Africa. In 1891 matches against other schools became a regular part of the football programme, and have naturally proved a most interesting feature of each season. Among the schools played may be mentioned Tonbridge, Dulwich, Sherborne, St. Paul's, Bedford, Cheltenham and Leys. The following list of Haileybury University blues and International caps will concisely show the prominent part the Hertfordshire School has played in the annals of the game.

OXFORD.—Atkinson, C. C., 1876; Bourdillon, H., 1873, 1874, 1875; Cadell, P. R., 1890; Champneys, F. W., 1874, 1875, 1876; Cox, F. L., 1879; Gaisford, R. B., 1876; Gibson, A. G., 1894, 1895; Koe, A. P., 1886; Kitson, G. A., 1895; Legge, D., 1897; Merivale, G. M., 1874; Russell, H., 1873, 1874, 1875; Reid, C. J., 1896; Surtees, E. A., 1885.

CAMBRIDGE.—Batten, J. M., (captain) 1873 and 1874; Darch, W. J., 1875; Gurdon, C., 1877; Gurdon, E. T., 1874, (captain) 1875 and 1876; Hopper, L. B., 1897; James, S. R., 1876, (captain) 1877, 1878; Le Fanu, V. C., 1884, 1885, 1886; Lucas, P. M., 1882; Mackie, O. G., 1895, 1896, (captain) 1897; Nelson, W. E., 1892; Pater, S., 1880, 1881; Steward, R., 1875, 1876; Trethewy, A., 1888.

INTERNATIONALS.—Batten, J. M., (S¹) 1874; Birkett, L. C. (S) 1875, 1877, (I) 1877; Cheston, E. C. (S) 1873, 1874, 1875, 1876, (I) 1875; Gurdon, E. T. (S) 1878, 1880, 1881, 1882, (captain) 1883, 1884, 1886, (I) 1879, 1881, (captain) 1883, 1884, 1885, (W) 1881, (captain) 1883, 1884, 1885; Gurdon, C. (S) 1880, 1881, 1882, 1883, 1884, 1886, (I) 1880, 1881, 1882, 1885, 1886, (W) 1881, 1884, 1886; Mackie, O. G. (S) 1897, (I) 1898.

V. C. Le Fanu played for many years for Ireland.

Outside Haileybury the Rugby clubs in Hertfordshire have always been limited in number, and none has ever obtained prominence in the Rugby world. The oldest in point of date is the Hertford town club which, though it played at Hertford in 1872, had migrated to that town after a previous existence of some years' duration at Ware. H. Athman was the secretary, and for several seasons matches were played under both codes of rules. Eventually the Association section became the more popular owing to the greater facilities for finding opponents, and the Rugby game was dropped. The Cheshunt club dated from 1869, and for several years, under W. H. Hunt and later under E. Trimmer, met with a fair amount of success. The match ground was situated at Waltham adjoining Trinity Church.

Totteridge Park School followed the carrying game enthusiastically in the seventies and eighties and served as a useful nursery for supplying capable players to neighbouring teams. The school however has now adopted Association rules. The Pinner club, whose name would rather imply a Middlesex connexion, had its ground at Watford and showed promising form for some seasons. Against such London clubs as Kensington, Rosslyn Park and Upper Clapton the team rendered a good account. Unfortunately the club was disbanded several years ago. A similar fate befell the Hertfordshire Wanderers, who must not be confounded with the Association club the Hertfordshire Rangers. Both teams played at Watford, the Wanderers having migrated there in 1887 from St. Albans.

In 1893 great efforts were made to form a West Hertfordshire club, and for a few seasons success appeared probable. Like the old Hertfordshire Wanderers the promoters selected Watford as the scene of action. Among others who played for the club were C. D. Fastnedge, W. Denman, A. E. Ashley, F. F. Burrows, T. J. Peacock and C. H.

¹ Letters S, I, W denote respectively played against Scotland, Ireland, Wales.

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Wickes. Hertfordshire however again proved to be an uncongenial soil for the Rugby game, and the club died out when quite a young organization. No doubt one factor which has greatly tended to the disappearance of the Rugby game in the county has been the dearth of opponents. Formerly on the Middlesex

border Rugby clubs existed, such as Enfield Athletic, The Mohicans, Hendon and Edmonton Oakfield, with whom matches could be exchanged. These North Middlesex clubs have either disappeared or taken to the Association game, and the Hertfordshire clubs have followed in their wake.

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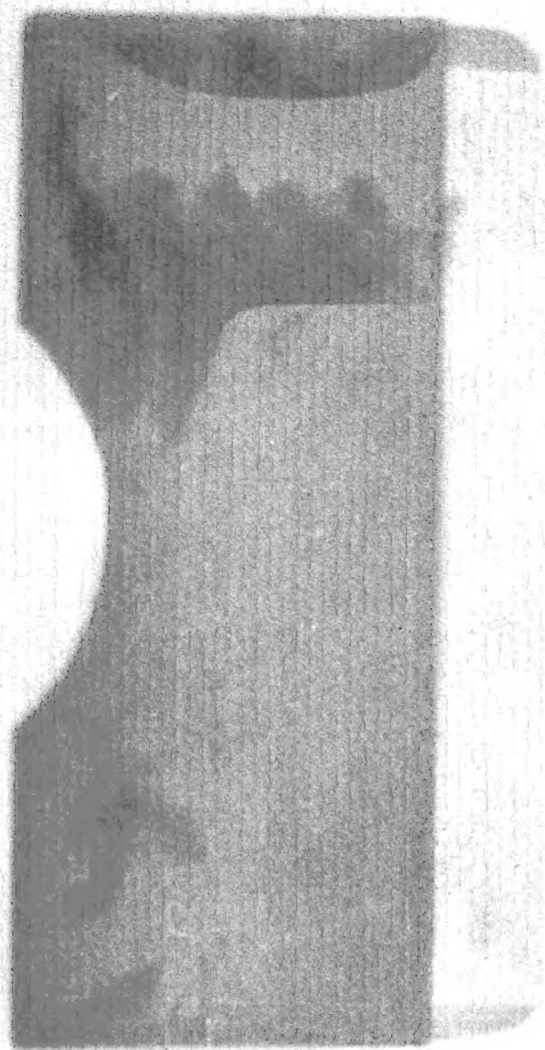
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